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DIVISION OF APPLIED SCIENCE AND TECHNOLOGY

PB192091

RESEARCH, DEVELOPMENT AND DEMONSTRATION PROJECTS

APRIL 1, 1970

CLEAN
WATER

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FEDERAL WATER POLLUTION CONTROL ADMINISTRATION

Wahington, D. C.

339

10) Research, Development and Demonstration Projects,

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Division of Applied Science and Technology,

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~~Allen Cywin, Director~~

22) FWQA Report, April 1, 1970. 337p,

16) FWQA Project 10000---4/70

5) Federal Water ~~Pollution Control~~ Quality Administration, Washington, D.C.

~~David D. Dominick - Commissioner~~

~~UNITED STATES DEPARTMENT OF THE INTERIOR~~

27) A total of 331 information sheets were compiled in the following descriptive categories:

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Storm and Combined Sewer Pollution Control Branch

Mr. William A. Rosenkranz, Chief

PPBS Categories

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Industrial Pollution Control Branch

Mr. William Lacy, Chief

PPBS Categories

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Agricultural and Marine Pollution Control Branch

Mr. Harold Bernard, Chief

PPBS Categories

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Pollution Control Analysis Branch

Mr. Ernst P. Hall, Chief

PPBS Categories

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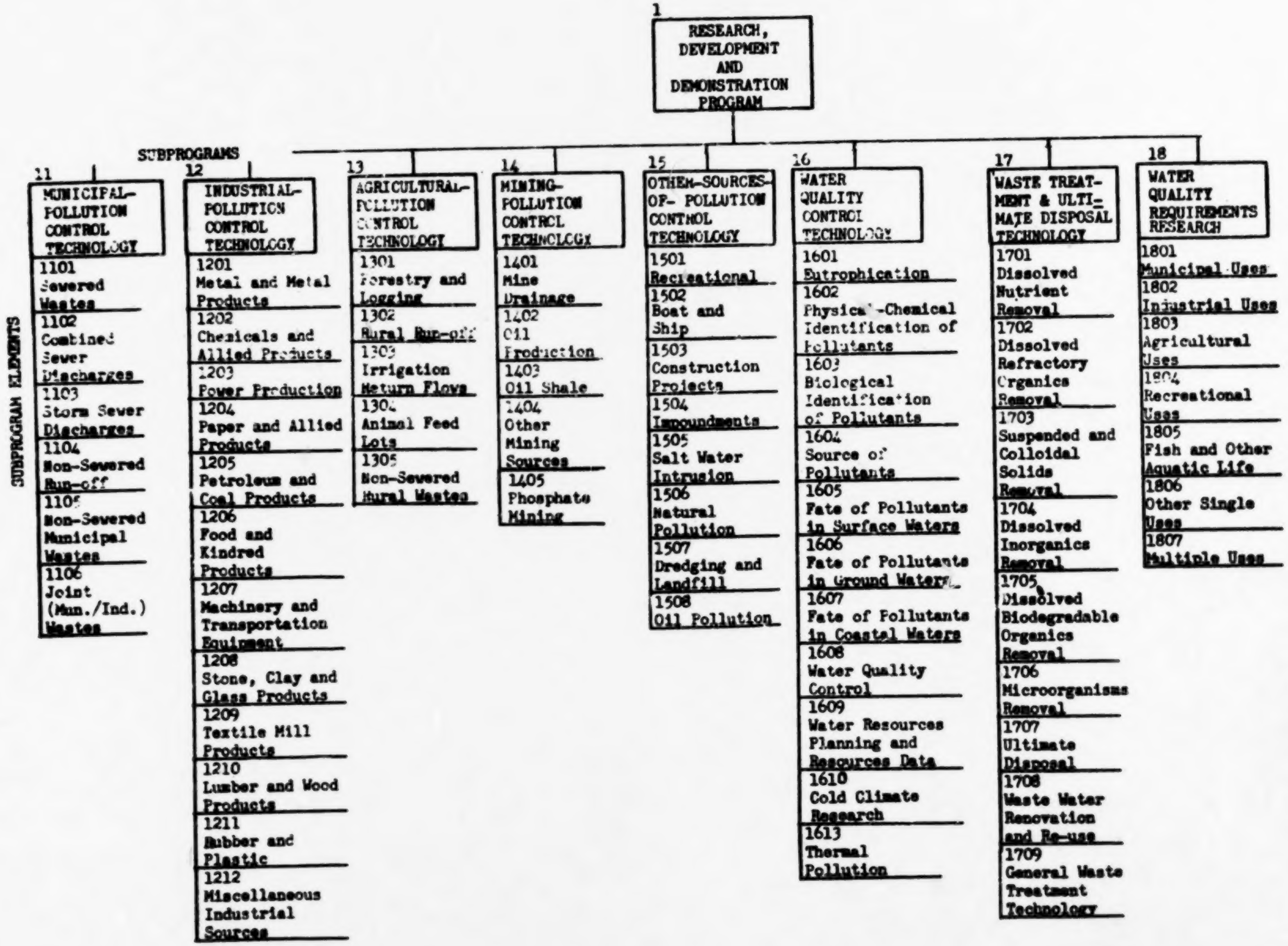

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RESEARCH, DEVELOPMENT AND
DEMONSTRATION PROGRAM
STRUCTURE

Office of R&D
FWPCA
October 17, 1968

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INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act(Clean Water Restoration Act).

GRANTEE: Minneapolis-St. Paul Sanitary District, St. Paul, Minnesota

TITLE OF PROJECT: "Dispatching System for Control of Combined Sewer Losses"

PROJECT SITE: Minneapolis-St. Paul, Minnesota

DATE AWARDED: May 25, 1966

FEDERAL GRANT: $870,750

TOTAL EST. PROJ. COST: $1,741,500

PROJECT NUMBER: 1-MINN-1

PPBS NO. 1102

DESCRIPTION OF PROJECT: Dispatching system for control of combined sewer losses. The project includes preliminary studies to update historic data, a four phase construction project consisting of installation of a gauging system, a data logger, five river monitors, telemetering rain gages, regulator modifications, and a post-construction program evaluation to include special studies by the University of Minnesota. Existing regulators will be replaced with modern power operated gates at 18 key diversion locations. A supervisory system will be provided to telemeter gate positions, flows and levels in sewers to be controlled by the new regulators. This information will be transmitted to a central point where a dispatching operator can observe conditions and regulate flow accordingly. Maximum utilization of interceptor sewer capacity would be assured and overflow to the river will be minimized.

INQUIRIES: *Contact the* Storm and Combined Sewer Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
633 Indiana Ave. N.W.
Washington, D. C. 20242

INFORMATION SHEET – –

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: Springfield Sanitary District

TITLE OF PROJECT: "Evaluation of a Stabilization Pond for Treatment of Combined Sewer Overflows"

PROJECT SITE: Springfield, Illinois **DATE AWARDED:** June 14, 1966

FEDERAL GRANT: $86,570 **TOTAL EST. PROJ. COST:** $199,140

PROJECT NUMBER: 3-ILL-1 **PPBS NO.** 1102

DESCRIPTION OF PROJECT: The goal of this project is to determine the effectiveness of a stabilization pond as an overflow treatment device for combined sewage. A twelve-acre stabilization pond will receive the flow by-passed at an existing pumping station during periods of precipitation. This pond will intercept short duration, high intensity rainfalls. The system will provide both temporary storage and treatment of the overflow.

Evaluation of the facility will not only include routine sampling of influent and effluent, but will also include biological sampling of the pond and the receiving stream.

INQUIRIES: *Contact the* Storm and Combined Sewer Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
633 Indiana Ave. N.W.
Washington, D. C. 20242

INFORMATION SHEET --

RESEARCH & DEVELOPMENT CONTRACT

This sheet describes briefly an R&D Contract awarded under Sec. 6, Federal Water Pollution Control Act (Clean Water Restoration Act).

CONTRACTOR: Rand Development Corporation
Cleveland, Ohio

TITLE OF PROJECT: "Rapid Flow Combustible Filter"

PROJECT SITE: Cleveland, Ohio

FEDERAL CONTRACT: $300,000   **DATE AWARDED:** August 8, 1966

PROJECT NUMBER: WA 67-2   **PPBS NO:** 1102

DESCRIPTION OF PROJECT:

This project includes the design, construction, operation and evaluation of a rapid flow combustible filter. This filter, which will utilize combustible materials -- primarily coal, will be installed at a combined sewer overflow in Cleveland, Ohio. Overflowing waste will percolate through a basket containing a relatively shallow bed of coal before discharge. Removal of coarser materials by mechanical filtration is the anticipated result. Upon exhaustion of the filter, the coal-solids mixture will be incinerated.

The investigators, in addition to designing and building the unit, will develop design criteria for future, similar installations. Evaluation of the process will include not only treatment efficiency, but also information on operating costs and procedures. Difficulties encountered in incinerating the coal after use will also be investigated.

INQUIRIES: *Contact the*

Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
633 Indiana Avenue, N.W.
Washington, D. C. 20242

G.W:

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act(Clean Water Restoration Act).

GRANTEE: Metropolitan District Commission
20 Somerset Street
Boston, Massachusetts

TITLE OF PROJECT: "Boston University Bridge Storm Water Detention and Chlorination Station"

PROJECT SITE: Cambridge, Mass.

DATE AWARDED: September 2, 1966

FEDERAL GRANT: $1,000,000

TOTAL EST. PROJ. COST: $4,345,650

PROJECT NUMBER: 7-Mass-1

PP&S NO. 1102

DESCRIPTION OF PROJECT:

A detention basin will be constructed to intercept peak flows and to chlorinate waste water, as a means of reducing combined sewage overflows into the Charles River.

The project includes the construction and evaluation of a combined sewer overflow facility, designed to provide a 10-minute minimum sedimentation-detention time with an influent of 233 MGD. The chlorinated effluent will flow by gravity from the detention tanks through a 96 inch outfall pipe into the Charles River. Sludge deposits in the detention tanks will be returned to the sewer system to be treated at the sewage treatment plant. All settled materials will be flushed out of the tanks and into the sewer system after the storm subsides.

INQUIRIES: *Contact the* Storm and Combined Sewer Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
633 Indiana Ave. N.W.
Washington, D. C. 20242

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INFORMATION SHEET --

RESEARCH & DEVELOPMENT CONTRACT

This sheet describes briefly an R&D Contract awarded under Sec. 6, Federal Water Pollution Control Act (Clean Water Restoration Act).

CONTRACTOR: Havens and Emerson, Cleveland, Ohio

TITLE OF PROJECT: "Feasibility Study of A Stabilization-Rentention Basin for the Treatment of Combined Sewer Overflows, Wastewater Treatment Plant Effluents and Surface Runoff Waters at Cleveland, Ohio "

PROJECT SITE: Cleveland, Ohio

FEDERAL CONTRACT: $87,766

DATE AWARDED: November 2, 1966

PROJECT NUMBER: 14-12-27

PPBS NO: 1102

DESCRIPTION OF PROJECT:

A feasibility study will be made to evaluate the use of a stabilization-retention basin for treatment of surface runoff, sewage treatment plant effluent, and combined sewer overflows. The location of the basin would be in Lake Erie and will serve a portion of the Easterly Sewerage District of the City of Cleveland.

Rainfall-runoff sanitary quality relationships will be measured, and hydraulic and sanitary design load data will be prepared. A preliminary design of a system to collect surface runoff, combined sewer overflow and the effluent from the Easterly Sewage Treatment Plant will be made. Hydraulic, structural and sanitary design criteria for the stabilization-retention basin will be prepared, and a preliminary design and cost estimate for a basin in Lake Erie will be made. Unit cost of treatment capabilities will be compared with similar costs and capabilities for other processes. Consideration will be given to legal aspects, solids removal, odor control and secondary uses.

Project has been completed. Final Report received.

INQUIRIES: *Contact the*

Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
633 Indiana Avenue, N.W.
Washington, D. C. 20242

G.W:

INFORMATION SHEET --

RESEARCH & DEVELOPMENT CONTRACT

This sheet describes briefly an R&D Contract awarded under Sec. 6, Federal Water Pollution Control Act [Clean Water Restoration Act].

CONTRACTOR: American Society of Civil Engineers
345 East 47th Street
New York, New York 10017

TITLE OF PROJECT: "Feasibility and Development of New Methods of Separating Sanitary Sewage from Combined Sewerage Systems"

PROJECT SITE: Cambridge, Mass.

FEDERAL CONTRACT: $343,210 **DATE AWARDED:** November 3, 1966

PROJECT NUMBER: 14-12-29 **PPBS NO:** 1102

DESCRIPTION OF PROJECT:

The project will determine the feasibility and applicability of installing small pressure conduits within combined (storm-sanitary) sewers as a means of separating sanitary sewage from storm water. The conduits will be used to transport finely ground sewage under pressure to interceptor sewers for conveyance to municipal treatment plants. It is anticipated that the separation of sanitary sewage from storm water will reduce the pollution load discharged to surface waters at system overflow points.

Combination grinder-pump units will be developed for both household and some commercial uses to pre-condition wastes for discharge into the pressure conduits. A limited number of these units will be installed in buildings in a demonstration area and will be connected to piping installed in existing combined sewers.

The system will be tested over a 6-month period. Concurrently, plans will be developed for a possible demonstration in an entire urban drainage area.

INQUIRIES: *Contact the* Storm and Combined Sewer Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
633 Indiana Avenue, N.W.
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GW: 102067

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act(Clean Water Restoration Act).

GRANTEE: Sewerage and Water Board of New Orleans, New Orleans, Louisiana

TITLE OF PROJECT: "Chlorination and Hypochlorination of Polluted Storm Water Pumpage"

PROJECT SITE: New Orleans, La.

DATE AWARDED: December 2, 1966

FEDERAL GRANT: $1,034,250

TOTAL EST. PROJ. COST: $1,429,000

PROJECT NUMBER: 14-LA-1

PPBS NO. 1102

DESCRIPTION OF PROJECT:

To control bacteriological pollution in Lake Pontchartrain the project will demonstrate the effectiveness, efficiency, and economics of using open drainage canals as treatment facilities; the effectiveness of chlorine and hypochlorite disinfection on intermittent high flow discharges; and the optimization of various feeding rates, multiple points of application, and contact time. Facilities for disinfection will be placed and operated in the St. Charles Canal, the London Avenue Canal and the Orleans Avenue Canal. A sodium hypochlorite blending plant will be constructed and a chlorine alarm system installed. The project will include the provision of appropriate instrumentation for the generation of quantitative and qualitative data necessary for a comprehensive evaluation.

INQUIRIES: *Contact the* Storm and Combined Sewer Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
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Washington, D. C. 20242

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INFORMATION SHEET --

RESEARCH & DEVELOPMENT CONTRACT

This sheet describes briefly an R&D Contract awarded under Sec. 6, Federal Water Pollution Control Act (Clean Water Restoration Act).

CONTRACTOR: The Western Company
2201 North Waterview Parkway
Richardson, Texas

TITLE OF PROJECT: "Methods to Reduce Water Pollution Caused by Storm Water Sewer Loading by Using Fluid Flow Friction Reducers"

PROJECT SITE: Richardson, Texas

FEDERAL CONTRACT: $300,178 **DATE AWARDED:** December 7, 1966

PROJECT NUMBER: 14-12-34 **PPBS NO:** 1102

DESCRIPTION OF PROJECT:

The objective of this project is to develop practical methods to control pollution of waterways caused by storm overloading of the sewerage system.

Small percentages of certain high-molecular-weight polymers will be added to the storm water or combined sewage to increase the flow rate. It is anticipated that the sewerage system flow capacity will be improved. Similar effects may result at the municipal treatment plant.

The contract involves a four-phase program encompassing laboratory screening of polymer additives, a polymer injection device, field testing the method, analysis of costs and benefits, and a determination of overall feasibility of the system as a means of inducing untreated overflows from sewerage systems.

The project has been completed. Final Report received (WP-20-22).

INQUIRIES: *Contact the* Storm and Combined Sewer Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
633 Indiana Avenue, N.W.
Washington, D. C. 20242

INFORMATION SHEET ‒ ‒

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act(Clean Water Restoration Act).

GRANTEE: City of Chippewa Falls, Wisconsin

TITLE OF PROJECT: "Utilization of a Storage Pond with Treatment for Combined Sewer Overflows"

PROJECT SITE: Chippewa Falls, Wis. **DATE AWARDED:** December 23, 1966

FEDERAL GRANT: $289,685 **TOTAL EST. PROJ. COST:** $526,700

PROJECT NUMBER: 22-Wis-2 **PPBS NO.** 1102

DESCRIPTION OF PROJECT:

Project includes construction of a combined storm water pumping station and storage pond, increased interceptor pumping capacity, increased interceptor pumping conduit, and final settling tank capacity, combined relief sewer and some separation. It will demonstrate the control and elimination of stormwater by passes by diverting to a storage pond for sedimentation with subsequent discharge to the waste water treatment works for both primary and secondary treatment with chlorination. The design, operation procedures, and treatment efficiency will be evaluated. Comparison with separation of storm and sanitary sewers will also be evaluated.

INQUIRIES: *Contact the*

Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
633 Indiana Ave. N.W.
Washington, D. C. 20242

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INFORMATION SHEET – –

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act(Clean Water Restoration Act).

GRANTEE: East Chicago Sanitary District, East Chicago, Indiana

TITLE OF PROJECT: "East Chicago Treatment Lagoon"

PROJECT SITE: East Chicago, Indiana **DATE AWARDED:** December 23, 1966

FEDERAL GRANT: $1,044,120 **TOTAL EST. PROJ. COST:** $3,116,533

PROJECT NUMBER: 11-IND-1 **PPBS NO.** 1102

DESCRIPTION OF PROJECT: Project will evaluate the effectiveness of treating combined sewer overflows in a very deep detention basin having aerobic and anaerobic levels of treatment. The aerobic treatment is accomplished by large oxygen transfer units suspended on surface of basin waters. The prime objective of the project is to demonstrate a control method to optimize the quality of treatment to storm water and combined sewage mixed with industrial waste water. This treatment will render a more acceptable discharge to the recieving waters. The demonstration will assess design criteria for detention basins to provide storage and treatment to storm water and combined sewer overflows; design requirements for large oxygen transfer units in relation to volumes of waste water and quality of effluent.

INQUIRIES: *Contact the* Storm and Combined Sewer Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
633 Indiana Ave. N.W.
Washington, D. C. 20242

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INFORMATION SHEET — —

RESEARCH & DEVELOPMENT CONTRACT

This sheet describes briefly an R&D Contract awarded under Sec. 6, Federal Water Pollution Control Act (Clean Water Restoration Act).

CONTRACTOR: Rhodes Corporation
Oklahoma City, Okla.

TITLE OF PROJECT: "Use of a New Technique for Waste Treatment"

PROJECT SITE: Fort Smith, Arkansas

FEDERAL CONTRACT: $256,448 **DATE AWARDED:** December 28, 1966

PROJECT NUMBER: 14-12-11 **PPBS NO:** 1102

DESCRIPTION OF PROJECT:

This project includes the design, construction, operation and evaluation of a prototype high capacity treatment facility designed to handle excessive flows received at a treatment plant during period of storm runoff. The treatment system to be investigated consists of cyclones for removal of coarse solids followed by a high rate dissolved air flotation system for removal of finer solids. Detention in the flotation unit will be less than 10 minutes.

The demonstration unit will be designed to handle 500,000 gallons daily. A portion of the flow at a treatment plant receiving flow from a combined sewerage system is to be diverted through the facility. For purposes of the demonstration, both wet and dry weather flow will be treated. Discreet data will be kept for storm events.

In addition to treatment efficiency of the facility and its components, the investigators will determine design criteria, operating and maintenance problems and costs. Recommendations will include suggestions for use at remote locations.

INQUIRIES: *Contact the* Storm and Combined Sewer Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
633 Indiana Avenue, N.W.
Washington, D. C. 20242

G.W:

INFORMATION SHEET --

RESEARCH & DEVELOPMENT CONTRACT

This sheet describes briefly an R&D Contract awarded under Sec. 6, Federal Water Pollution Control Act [Clean Water Restoration Act].

CONTRACTOR: FMC Corporation

TITLE OF PROJECT: "Demonstrate the Feasibility of Reducing Pollution from Combined Sewer Storm Overflows by Means of Periodic Flushing During Dry Weather"

PROJECT SITE: Santa Clara, California

FEDERAL CONTRACT: $31,093 **DATE AWARDED:** December 28, 1966

PROJECT NUMBER: 14-12-19 **PPBS NO:** 1102

DESCRIPTION OF PROJECT:

The overall objective of the project is to demonstrate the feasibility of reducing pollution from combined sewer storm overflows by means of periodic flushing during dry weather. Intermediate objectives include the study of the theoretical basis for correlating flushing requirements for various sewer conditions, verification of the hydraulic requirements for flushing by test so as to establish a mathematical model for application to sewer systems, and installation and systematic operation of flushing equipment in a significant area of an actual combined sewer system. The complete demonstration program would be carried out in three phases to accomplish the above objectives. Phase I, which is the immediate contract, includes a study of the overall concept, and design and development of cost estimates for constructing test equipment.

The project has been completed. Final Report received.

INQUIRIES: *Contact the*

Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
633 Indiana Avenue, N.W.
Washington, D. C. 20242

GW:

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act(Clean Water Restoration Act).

GRANTEE: Municipality of Metropolitan Seattle
400 West Harrison Street
Seattle, Washington 98119

TITLE OF PROJECT: "Duwamish River--Elliott Bay Storm Water Control System"

PROJECT SITE: Seattle, Washington

DATE AWARDED: December 29, 1966

FEDERAL GRANT: $1,400,000

TOTAL EST. PROJ. COST: $3,891,900

PROJECT NUMBER: 13-Wash-1

PPBS NO. 1102

DESCRIPTION OF PROJECT:

A sewerage System Control Scheme designed to regulate and program system flows thru the use of overflow regulators operation-programmed by use of computers. Flows to the waste treatment facilities will be controlled to improve efficiency of plant operation during rainfall periods and to provide selective controlled discharging of storm-water overflow at different points in a manner which will minimize the effect of waste discharges in the receiving waters. Automatic water quality monitors will be utilized as control devices in tirggering discharges to surface water from the regulator stations. Functions of the system for controlling pollution caused by storm water overloading of treatment facilities and sewerage system overflows will be evaluated.

INQUIRIES: *Contact the* Storm and Combined Sewer Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
633 Indiana Ave. N.W.
Washington, D. C. 20242

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INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: City of Columbus, Ohio

TITLE OF PROJECT: "Modification of Whittier Street Storm Standby Tanks"

PROJECT SITE: Columbus, Ohio

DATE AWARDED: March 30, 1967

FEDERAL GRANT: $300,000

TOTAL EST. PROJ. COST: $1,231,519

PROJECT NUMBER: 27-Ohio-1

PPBS NO. 1102

DESCRIPTION OF PROJECT:

This project consists of an evaluation of the pollution reduction effectiveness of storm overflow tanks modernized by installation of automated sluice gates and other equipment.

Physical features of the project consist of the renovation of three existing combined sewer overflow tanks having a capacity of 1.3 mg each. The renovation includes automatic controls for the tank influent sluice gates, new travelling bridge type sludge collectors and new pumps. One objective of the automation is to keep sludge levels low by continuously removing it from the tanks and thereby preventing anaerobic decomposition and its resultant odors. Another objective is to control flows at the treatment plant by proper use of the automatically operated sluice gates. The improvements in tank efficiencies are expected to reduce bacterial contamination of the receiving stream, the Scioto River.

Evaluation will include studies of the efficiency of the tanks as treatment units as well as studies of the effect of the system on the river.

INQUIRIES: *Contact the*

Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
633 Indiana Ave. N.W.
Washington, D. C. 20242

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 5, Federal Water Pollution Control Act(Clean Water Restoration Act).

GRANTEE: Merrimack College
Turnpike Road
North Andover, Massachusetts 01845

TITLE OF PROJECT: "Controlling Pollution from Combined Sewer Overflows and Storm Water by Electrode Potential"

PROJECT SITE: North Andover, Mass.

DATE AWARDED: December 22, 1968

FEDERAL GRANT: $21,563

TOTAL EST. PROJ. COST: $45,413

PROJECT NUMBER: WPD 217-01-68

PPBS NO. 1102

DESCRIPTION OF PROJECT:

To investigate and demonstrate at the laboratory level the feasibility of utilizing electrode potential measuring systems to indicate the strength of combined sewage. A secondary objective of this demonstration will be determining the feasibility of the incorpation of such an electrolytic circuit in a control scheme to regulate the flow of combined or other sewage by mechanical means.

INQUIRIES: *Contact the*

Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
[redacted]
Washington, D. C. 20242

INFORMATION SHEET --

RESEARCH & DEVELOPMENT CONTRACT

This sheet describes briefly an R&D Contract awarded under Sec. 6, Federal Water Pollution Control Act [Clean Water Restoration Act].

CONTRACTOR: Bowles Engineering Corporation
9347 Fraser Street
Silver Spring, Maryland 20910

TITLE OF PROJECT: "Fluidic Interceptor Study"

PROJECT SITE: Silver Spring, Maryland

FEDERAL CONTRACT: $58,891.00 **DATE AWARDED:** February 4, 1969

PROJECT NUMBER: 14-12-486 (11020DGZ) **PPBS NO:** 1102

DESCRIPTION OF PROJECT:

A six (6) month initial research and development program to establish design and predicted performance criteria for a combined sewer overflow regulator based upon fluidic technology. A laboratory scale unit will be designed, fabricated and evaluated. If full scale applicability is determined, a program for full scale testing in conjunction with a municipality will be prepared. Application of fluidic principles offers the potential to minimize flow blockages, reduce power costs, minimize operation and maintenance costs and improve overall reliability of regulator operation.

INQUIRIES: *Contact the* Storm and Combined Sewer Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
633 Indiana Avenue, N.W.
Washington, D. C. 20242

G.W:

INFORMATION SHEET - - -

RESEARCH & DEVELOPMENT CONTRACT

This sheet describes briefly an R & D Contract awarded under Sec. 6, Federal Water Pollution Control Act (Clean Water Restoration Act).

CONTRACTOR: Ionics Incorporated
65 Grove Street
Watertown, Massachusetts 02172

TITLE OF PROJECT: Feasibility of High Current Density Hypochlorite Generation

PROJECT SITE: Watertown, Mass.

DATE AWARDED: Feb. 19, 1969

FEDERAL CONTRACT: 14-12-490

TOTAL PROJ. COST: $74,646.00

PROJECT NUMBER: 11023 DAA

PPBS NO: 1102

BRANCH CHIEF: William Rosenkranz, Chief
Storm & Combined Sewer Pollution Control Br.

PROJECT OFFICER: Allyn Richardson
Northeast Region

DESCRIPTION OF PROJECT:

Ionics, Inc. will conduct a one year study to determine the feasibility and economics of operation of a high current density (400-500 A/SF) hypochlorite generator for utilization in the treatment of combined sewer overflows and/or storm sewer discharges. If technical and economical feasibility is determined, the contractor will prepare a prototype design in sufficient detail to permit fabrication and field testing of a full-scale device. The prototype design shall be modular in nature and compatible with current hypochlorite feeding devices. Over-all operation and maintenance costs shall be developed. A operation and maintenance manual will be provided.

INQUIRIES: Contact the
Storm & Combined Sewer Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
Washington, D.C. 20242

INFORMATION SHEET --

RESEARCH & DEVELOPMENT CONTRACT

This sheet describes briefly an R&D Contract awarded under Sec. 6, Federal Water Pollution Control Act (Clean Water Restoration Act).

CONTRACTOR: Water Resources Engineers, Inc.
1900 Olympic Boulevard
Walnut Creek, California 94596

TITLE OF PROJECT: TRIUMVIRATE, Storm Water Pollution Control Management

PROJECT SITE: Walnut Creek, California

FEDERAL CONTRACT: $114,860 *DATE AWARDED:* March 4, 1969

PROJECT NUMBER: 14-12-501 (11024EBI) *PPBS NO:* 1102

DESCRIPTION OF PROJECT: An eighteen (18) month program to develop a comprehensive mathematical model capable of representing urban storm water runoff phenomena, both quantity and quality, from the onset of precipitation on the basin, through collection, conveyance, storage, and treatment systems, to points downstream from outfalls which are significantly affected by storm discharges. The validity of the model for simulating existing situations will be demonstrated by applying it to several storm and combined sewer drainage basins: (1) Storm sewers: 1 large and 1 small basin; (2) Combined sewers: 1 large and 1 small basin.

Development of the model is scheduled for twelve months and demonstration is for a period of six (6) months.

The Triumvirate of University of Florida, Water Resources Engineers, Inc., and Metcalf and Eddy, Inc. have joined together (under the overall coordination of Metcalf and Eddy, Inc.) to develop this working tool to assist municipalities in the management and control for storm water pollution abatement. Total project cost is $513,650.

INQUIRIES: *Contact the* Storm and Combined Sewer Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
633 Indiana Avenue, N.W.
Washington, D. C. 20242

G.I:

INFORMATION SHEET --

RESEARCH & DEVELOPMENT CONTRACT

This sheet describes briefly an R&D Contract awarded under Sec. 6, Federal Water Pollution Control Act (Clean Water Restoration Act).

CONTRACTOR: Metcalf and Eddy, Inc.
1029 Corporation Way
Palo Alto, California 94303

TITLE OF PROJECT: TRIUMVIRATE, Storm Water Pollution Control Management

PROJECT SITE: Palo Alto, California

FEDERAL CONTRACT: $253,800

DATE AWARDED: March 4, 1969

PROJECT NUMBER: 14-12-502 (11024DOC)

PPBS NO: 1102

DESCRIPTION OF PROJECT: An eighteen (18) month program to develop a comprehensive mathematical model capable of representing urban storm water runoff phenomena, both quantity and quality, from the onset of precipitation on the basin, through collection, conveyance, storage, and treatment systems, to points downstream from outfalls which are significantly affected by storm discharges. The validity of the model for simulating existing situations will be demonstrated by applying it to several storm and combined sewer drainage basins: (1) Storm sewers: 1 large and 1 small basin; (2) Combined sewers: 1 large and 1 small basin.

Development of the model is scheduled for twelve months and demonstration is for a period of six (6) months.

The Triumvirate of University of Florida, Water Resources Engineers, Inc. and Metcalf and Eddy, Inc. have joined together (under the overall coordination of Metcalf and Eddy, Inc.) to develop this working tool to assist municipalities in the management and control for storm water pollution abatement. Total project cost is $513,650.

INQUIRIES: *Contact the* Storm and Combined Sewer Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
633 Indiana Avenue, N.W.
Washington, D. C. 20242

G.I:

INFORMATION SHEET --

RESEARCH & DEVELOPMENT CONTRACT

This sheet describes briefly an R&D Contract awarded under Sec. 6, Federal Water Pollution Control Act [Clean Water Restoration Act].

CONTRACTOR: University of Florida
Department of Environmental Engineering
Gainesville, Florida 32601

TITLE OF PROJECT: TRIUMVIRATE, Storm Water Pollution Control Management

PROJECT SITE: Gainesville, Florida

FEDERAL CONTRACT: $144,990 **DATE AWARDED:** March 11, 1969

PROJECT NUMBER: 14-12-503 (11024EBJ) **PPBS NO:** 1102

DESCRIPTION OF PROJECT: An eighteen (18) month program to develop a comprehensive matehmatical model capable of representing urban storm water runoff phenomena, both quantity and quality, from the onset of precipitation on the basin, through collection, conveyance, storage, and treatment systems, to points downstream from outfalls which are significantly affected by storm discharges. The validity of the model for simulating existing situations will be demonstrated by applying it to several storm and combined sewer drainage basins: (1) Storm sewers: 1 large and 1 small basin; (2) Combined sewers: 1 large and 1 small basin.

Development of the model is scheduled for twelve months and demonstration is for a period of six (6) months.

The Triumvirate of University of Florida, Water Resources Engineers, Inc. and Metcalf and Eddy, Inc. have joined together (under the overall coordination of Metcalf and Eddy, Inc.) to develop this working tool to assist municipalities in the management and control for storm water pollution abatement. Total project cost is $513,650.

INQUIRIES: *Contact the* Storm and Combined Sewer Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
633 Indiana Avenue, N.W.
Washington, D. C. 20242

G.V:

INFORMATION SHEET --

RESEARCH & DEVELOPMENT CONTRACT

This sheet describes briefly an R&D Contract awarded under Sec. 6, Federal Water Pollution Control Act (Clean Water Restoration Act).

CONTRACTOR: American Standard Incorporated
P.O. Box 2003
New Brunswick, New Jersey

TITLE OF PROJECT: "Develop a Suspended Solids Monitor"

PROJECT SITE: New Brunswick, New Jersey

FEDERAL CONTRACT: $121,946

DATE AWARDED: March 28, 1969

PROJECT NUMBER: 14-12-494

PPBS NO: 1102

DESCRIPTION OF PROJECT:

A suspended solids monitor for use in continuously measuring suspended solids in sewage will be developed and evaluated. A new principal for such measurement, based on the measurement of light depolarization, will be utilized. Phase I of the project will determine feasibility of the technique, Phase II will accomplish design of the prototype instrument, Phase III will involve selection and bench-scale testing of optical components, and electronic components will be selected in Phase IV. Phase V will consist of field standardization and calibration of the prototype in a sewage environment.

INQUIRIES: *Contact the* Storm and Combined Sewer Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
633 Indiana Avenue, N.W.
Washington, D. C. 20242

G.W:

INFORMATION SHEET --

RESEARCH & DEVELOPMENT CONTRACT

This sheet describes briefly an R&D Contract awarded under Sec. 6, Federal Water Pollution Control Act (Clean Water Restoration Act).

CONTRACTOR: American Public Works Association-Research Foundation
1313 East 60th Street
Chicago, Illinois 60637

TITLE OF PROJECT: "Causes, Extent and Control of Infiltration"

PROJECT SITE: Chicago, Illinois

FEDERAL CONTRACT: $89,780 **DATE AWARDED:** May 23, 1969

PROJECT NUMBER: 14-12-550 **PPBS NO:** 1102

DESCRIPTION OF PROJECT:

A 15 month study of the causes and control of storm and ground water infiltration into sanitary and combined sewers -- including investigation of sewer design, construction, testing and inspection, and grouting practices. Specific objectives include: (1) catalog the extent and causes, (2) delineate the relative importance of various sources, (3) investigate present design criteria and practices, (4) review present construction, testing and inspection practices and techniques, (5) investigate present infiltration detection, leak location and grouting techniques and practices, (6) identify future research, development and demonstration needs and (7) prepare a "Manual of Recommended Practice"

INQUIRIES: *Contact the* Storm and Combined Sewer Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
633 Indiana Avenue, N.W.
Washington, D. C. 20242

G.W:

INFORMATION SHEET

Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Contract, under Section 6a1, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR: (Name and Address)
Battelle Memorial Institute
Pacific Northwest Laboratory
P.O. Box 999
Richland, Washington 99352

PROJECT DIRECTOR: (Name and Address)
Allen J. Shuckrow
Pacific Northwest Laboratory
Battelle Memorial Institute
Richland, Washington 99352

TITLE OF PROJECT: "Development, Demonstration and Evaluation of Physical-Chemical Treatment of Combined Storm-Sanitary Sewage"

PROJECT SITE: Richland, Washington, and selected field sites

PROGRAM (PROJECT) NUMBER:
14-12-519

DATE OFFERED:

DATE ACCEPTED (AWARDED):
June 23, 1969

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: 6/23/69 Thru: 12/23/72	$ 391,310	$391,310

DESCRIPTION OF PROJECT:

The project is a two and one-half year development, demonstration and evaluation of the applicability, effectiveness and economics of a physical-chemical method of treating combined sewage. The basic process to be demonstrated utilizes powdered activated carbon adsorption, inorganic coagulation, polyelectrolyte flocculation, sedimentation and spent carbon regeneration.

Treatment units and process methodology will be specifically designed to meet the constraints of high and widely fluctuating wastewater volumes, widely varying wastewater quality, short detention times, intermittant use, low first cost and economics of operation, and small construction sites. Beginning with bench-scale design experiments the process will be carried thru pilot-scale operations and detailed evaluation of the method.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

INFORMATION SHEET

Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Demonstration Grant, under Section 6a1, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR: (Name and Address)
New York State Department of Health
84 Holland Avenue
Albany, New York 12208

PROJECT DIRECTOR: (Name and Address)
Leo J. Hetling
(Address same as above)

TITLE OF PROJECT: "A Pressure Sewer System Demonstration"

PROJECT SITE: Albany, New York

PROGRAM (PROJECT) NUMBER:
11022DQI

DATE OFFERED:
March 24, 1969

DATE ACCEPTED (AWARDED):
April 16, 1969

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: 4/16/69 Thru: 12/70	$ 311,800	$ 200,800

DESCRIPTION OF PROJECT:

The New York State Department of Health proposes a 21 month investigation to install, demonstrate and evaluate a pressure sewer system which could be utilized to separate sanitary sewage from combined sanitary sewage and storm water. A pilot-scale system will be designed to serve 11-12 houses in a redevelopment area in Albany, New York, presently served by combined sewers. Prototype pump-grinder units developed by the General Electric Company as a part of the ASCE Contract (14-12-29) would be utilized to convey sewage from the home to the pressure sewer in the street.

Four principal objectives are incorporated in the project: (1) monitoring, evaluation of the prototype pump-grinder units to determine reliability and need for modification or redesign. (2) test durability of the units operating singly and in concern (manifolded to common pressure sewer). (3) provide proof of the field suitability of the assemblage, which should be considered a module of a larger pressure system. (4) provide new data which would be invaluable in subsequent pressure system applications.

Four principal investigating entities would be involved in conducting the project, each with assigned responsibilities: New York State Department of Health, New York State Pure Waters Authority, American Society of Civil Engineers and the Environmental Technology, Inc.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act(Clean Water Restoration Act).

GRANTEE: City of Buffalo
65 N. Vagara Street
Buffalo, New York 14202

TITLE OF PROJECT: "Proposed Program for Preventing and Eliminating Oil Pollution from the Buffalo River".

PROJECT SITE: Buffalo, New York

DATE AWARDED: 7-28-68

FEDERAL GRANT: 552,895

TOTAL EST. PROJ. COST: 737,194

PROJECT NUMBER: 11020 DJG

PPBS NO. 1101 & 1102

Project Duration: 18 months.

DESCRIPTION OF PROJECT:

The Proposed Program will:

1. Develop, utilize, and evaluate equipment and techniques for containing and removing oil in the Buffalo River, which is heavily polluted with oil due to the large number of industries located on it and to the sanitary/storm sewers which discharge into it. These methods will not interfere with the navigation of large ships in the river. This work will include utilization of pneumatic barriers for the containment of oil, as well as utilization of mechanical surface oil-boom systems, including the associated recovery equipment (skimmers).
2. Develop instrumentation for monitoring oil in sewer systems and the river, for detecting the sources of this oil, and for providing warning in time to permit its interception.
3. Provide and evaluate means for trapping oil in sewer systems.
4. Devise methods for sampling oil to determine its concentration.
5. Furnish an analysis of costs and an economic evaluation of methods and techniques utilized.

INQUIRIES: Contact the

Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
633 Indiana Ave. N.W.
Washington, D. C. 20242

INFORMATION SHEET

April 30, 1969
Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Demonstration Grant under Section 6a1, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR: (Name and Address)

City of Dallas
500 South Ervay Street
Dallas, Texas 75201

PROJECT DIRECTOR: (Name and Address) A. E. Holcomb

TITLE OF PROJECT: "Use of Polymers to Reduce or Eliminate Sewer Overflow in the Bachman Creek Sewer"

PROJECT SITE: Dallas, Texas

PROGRAM (PROJECT) NUMBER:
11022DZU

DATE OFFERED:
April 23, 1969

DATE ACCEPTED (AWARDED):
May 23, 1969

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: 5/23/69 Thru: 6/23/71	$ 441,647	$ 331,233

DESCRIPTION OF PROJECT:

The project consists of the design, construction and evaluation of a permanent polymer injection station on the Bachman Creek Sewer in Dallas, Texas. The project will further demonstrate and evaluate a technique developed earlier for FWPCA by contract which utilizes injection of polymers into a sewer for the purpose of increasing the carrying capacity of the pipe.

During periods of wet weather the Bachman Creek sewer receives excess quantities of ground or storm water due to infiltration. The flow then exceeds its carrying capacity and untreated wastes overflow in at least 10 locations, causing pollution of Bachman Creek. The project will seek to eliminate or greatly reduce the number and volume of untreated overflows by increasing the flow capacity of the Bachman Creek Sewer through the addition of polymers. Design criteria, operating techniques, optimum polymer concentration and other pertinent data critical to the intended use will be evaluated.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

INFORMATION SHEET

Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Grant, under Section 6a1 Demonstration, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR: (Name and Address)
City of Akron
166 South High Street
Akron, Ohio 44308

PROJECT DIRECTOR: (Name and Address)
C. E. Susong
City Engineer
166 South High Street
Akron, Ohio 44308

TITLE OF PROJECT: "Demonstration of Void Space Storage with Treatment and Flow Regulation"

PROJECT SITE: Akron, Ohio

PROGRAM (PROJECT) NUMBER:
11020DXH

DATE OFFERED:
April 24, 1969

DATE ACCEPTED (AWARDED):
May 23, 1969

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: 5/23/69 Thru: 5/23/72	$ 750,000	$ 562,500

DESCRIPTION OF PROJECT:

The project is to construct, operate and evaluate an underground storage/treatment facility for excess combined sewage. The facility will include novel concepts in construction and operation. It will be an excavated hopper shaped cavity, lined with an impermeable membrane, filled with an inert material covered with soil and the surface made useable. Storage will be in the void space of the fill. The flow regulation of influent will be a new and improved device, probably a fluidic regulator. The sewage will be pre-treated prior to entry to the storage facility. Tube clarifiers will be utilized to compare results with an on-going project where these units are being used for the first time at an operational level on combined sewage.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

INFORMATION SHEET

Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Research Grant, under Section 5a2, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR: (Name and Address) University of Cincinnati
Cincinnati, Ohio 45221

PROJECT DIRECTOR: (Name and Address) Herbert C. Preul, Ph.D., Dept. of Civil Engineering
University of Cincinnati, Cincinnati, Ohio 45221

TITLE OF PROJECT: "Urban Runoff Characteristics"

PROJECT SITE: Cincinnati, Ohio

PROGRAM (PROJECT) NUMBER:
11024DQU

DATE OFFERED:
May 28, 1969

DATE ACCEPTED (AWARDED):
June 23, 1969

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: 6/23/69 Thru: 6/23/70	$ 55,690	$ 52,905 (first year)

DESCRIPTION OF PROJECT:

The intent of this first year of a proposed three year research project is to collect, for the first time, detailed information defining the physical characteristics of an urban drainage area tributary to a combined sewer drainage system and detailed data relating to the quantity and quality of various sources of pollution within the combined sewer drainage area. Generally in the past, data have been collected only at the actual overflow location from a drainage area. The collection and evaluation of data from within the tributary drainage area will provide valuable insights regarding methods for controlling the strength and volume of combined sewer overflows.

A comprehensive storm water management mathematical model is presently under development for predicting the quantity and quality of combined sewer overflows. The detailed data collected will be utilized for verification and utilization of this model by communities needing a working tool for development of combined sewer overflow abatement programs.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

INFORMATION SHEET

Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a **Demonstration Grant** under Section **6a1**, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR: (Name and Address)

City of Kenosha
100-51st Place
Kenosha, Wisconsin
Mr. O. Fred Nelson

PROJECT DIRECTOR: (Name and Address)

Rex-Chainbelt Technical Center
5101 West Beloit Road
West Milwaukee, Wisconsin 53214

TITLE OF PROJECT: **"Demonstration Project of Biological Absorption of Pollutants from Combined Storm Water Runoff and Sanitary Sewage"**

PROJECT SITE: **Kenosha, Wisconsin**

PROGRAM (PROJECT) NUMBER: **11023EKC**

DATE OFFERED: **July 23, 1969**

DATE ACCEPTED (AWARDED):

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: 9/10/69 Thru: 6/10/72	$ 730,000	$547500

DESCRIPTION OF PROJECT:

The project objective is to provide a means for high rate biological treatment of combined sewage by the utilization of viable, activated sludge, clarification and disinfection. The method will be to store sludge in a biosolids reservoir and maintain a contact tank and solids stabilization tank in an empty and ready condition at the sewage treatment plant.

When a rain event occurs the excess combined sewage will be directed to the contact tank and the activated sludge proportionally introduced. The tank will be designed to have 15-30 min contact time. From the contact tank the flow will be directed to a clarifier for solids separation. The effluent will be disinfected and discharged to Lake Michigan with solids returned to the solids stabilization tank and reused or wasted to the digesters.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

INFORMATION SHEET --

RESEARCH & DEVELOPMENT CONTRACT

This sheet describes briefly an R&D Contract awarded under Sec. 6, Federal Water Pollution Control Act (Clean Water Restoration Act).

CONTRACTOR: Karl R. Rohrer Associates
529 Grant Street
Akron, Ohio 44311

TITLE OF PROJECT: "Construction of a Facility to Demonstrate Offshore Underwater Temporary Storage of Storm Overflow from a Combined Sewer"

PROJECT SITE: Sandusky, Ohio

FEDERAL CONTRACT: $498,248

DATE AWARDED: December 14, 1967

PROJECT NUMBER: 14-12-143

PPBS NO: 1102

DESCRIPTION OF PROJECT: A pilot plant underwater facility will be designed, constructed, operated and evaluated as a method of temporarily storing storm overflows from a combined sewer.

Storage will be completely under water in two 100,000-gallon containers of flexible rubber nylon material. These will be attached to a nearly square 24" pipe frame and anchored to the bed of Sandusky Bay of Lake Erie. After passing through a bar screen, the combined sewage will flow by gravity to the storage containers. An 1,800 GPM pump of a non-clogging type will be used to remove the untreated sewage from the storage containers and return it to the sewerage system for subsequent treatment.

Provision will be made for testing the system with fresh water during periods when there is no natural storm water overflow.

INQUIRIES: *Contact the* Storm and Combined Sewer Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
633 Indiana Avenue, N.W.
Washington, D. C. 20242

INFORMATION SHEET --

RESEARCH & DEVELOPMENT CONTRACT

This sheet describes briefly an R&D Contract awarded under Sec. 6, Federal Water Pollution Control Act [Clean Water Restoration Act].

CONTRACTOR: Melpar, Inc.
7700 Arlington Boulevard
Falls Church, Virginia

TITLE OF PROJECT: "Pilot Plant for Underwater Storage of Combined Sewer Overflow"

PROJECT SITE: Cambridge, Maryland

FEDERAL CONTRACT: $410,386 **DATE AWARDED:** December 14, 1968

PROJECT NUMBER: 14-12-133 **PPBS NO:** 1102

DESCRIPTION OF PROJECT:

Based on preliminary plans and specifications, the contractor will design, construct, operate and evaluate, and be prepared to remove, a pilot plant underwater facility to provide temporary storage of storm overflows from a combined sewer. Pollution of the Anacostia River due to such discharges will be controlled by capturing and temporarily storing the combined sewage in flexible underwater containers until the storm causing overflow has ended.

Storage will be completely under water in a single container having a maximum capacity of 200,000 gallons. The bottom of the tank will be of vinyl coated steel, placed in a depression excavated in Choptank River. The upper half of the storage container will be of flexible neoprene coated nylon material. Two, two speed (600 - 1,000 gpm) pumps will be used to pump the combined sewage to storage, and to remove the untreated sewage from the storage container and return it to the sewerage system for subsequent treatment.

The system will be tested with fresh water during periods when there is no natural storm water overflow.

INQUIRIES: *Contact the* Storm and Combined Sewer Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
633 Indiana Avenue, N.W.
Washington, D. C. 20242

G√:

INFORMATION SHEET --

RESEARCH & DEVELOPMENT CONTRACT

This sheet describes briefly an R&D Contract awarded under Sec. 6, Federal Water Pollution Control Act [Clean Water Restoration Act].

CONTRACTOR: Underwater Storage, Inc.
1028 Connecticut Ave., N.W.
Washington, D.C. 20036

TITLE OF PROJECT: "Pilot Demonstration Underwater Storage Facility for Storm Water Overflow"

PROJECT SITE: Washington, D.C.

FEDERAL CONTRACT: $483,067 **DATE AWARDED:** December 14, 1967

PROJECT NUMBER: 14-12-139 **PPBS NO:** 1102

DESCRIPTION OF PROJECT:

The project includes the design, construction, operation and evaluation and removal of a pilot plant underwater facility for temporary storage of storm overflows from a combined sewer. Pollution of the Anacostia River due to such discharges will be controlled by capturing and temporarily storing the combined sewage in flexible underwater containers until the storm causing overflow has ended.

Storage will be completely under water in two 100,000 gallon containers of flexible rubberized nylor material. These will be anchored to the bed of the Anacostia River. The combined sewage will pass through an automatic bar screen and grinder and through a grit chamber and then flow to the storage containers by gravity. Pumps of a non-clogging type will be used to remove the untreated sewage from the storage containers and return it to the sewerage system for subsequent treatment.

The system will be treated with water pumped from the river during periods when there is no natural storm water overflow.

INQUIRIES: *Contact the* Storm and Combined Sewer Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
633 Indiana Avenue, N.W.
Washington, D. C. 20242

GW:

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act(Clean Water Restoration Act).

GRANTEE: City of Somersworth, New Hampshire

TITLE OF PROJECT: "Somersworth Combined Sewage Overflow Treatment Project"

PROJECT SITE: Somersworth, N. H. **DATE AWARDED:** December 1, 1967

FEDERAL GRANT: $559,080 **TOTAL EST. PROJ. COST:** $931,800

PROJECT NUMBER: 30-NH-1 **PPBS NO.** 1102

DESCRIPTION OF PROJECT:

Construction and evaluation of the applicability of two one-million gallon combined sewage treatment and storage tanks. Pollution of receiving waters caused by discharge of untreated combined sewage during wet weather periods will be abated by providing facilities which will accomplish (a) short-term detention chlorination and pump-back to the sewerage system and (b) variable sedimentation times, chlorination, long-term detention and discharge to receiving waters. Effects of treatment on the receiving stream and sewage stabilization pond, technical and economic benefits will be evaluated. Potential benefits of polymers to increase carrying capacity of the interceptor will be explored.

INQUIRIES: *Contact the* Storm and Combined Sewer Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
633 Indiana Ave. N.W.
Washington, D. C. 20242

INFORMATION SHEET --

RESEARCH & DEVELOPMENT CONTRACT

This sheet describes briefly an R&D Contract awarded under Sec. 6, Federal Water Pollution Control Act (Clean Water Restoration Act).

CONTRACTOR: Rex-Chainbelt, Incorporated
Technical Center
Milwaukee, Wisconsin

TITLE OF PROJECT: "Development and Demonstration of a Combined Sewer Overflow Treatment System Utilizing New Concepts of Screening and Chemical Oxidation"

PROJECT SITE: Milwaukee, Wisconsin

FEDERAL CONTRACT: $197,989 **DATE AWARDED:** October 6, 1967

PROJECT NUMBER: 14-12-40 **PPBS NO:** 1102

DESCRIPTION OF PROJECT: This project is to study, design, fabricate and demonstrate a system for the treatment of combined sewer overflows using new techniques of screening chemical oxidation and/or air flotation.

The system to be studied will evaluate fine screening techniques for solids removal followed by chemical oxidation and disinfection or air flotation and disinfection prior to discharge of the effluent. The fine screening phase is intended to reduce the organic loading so that chemical-oxidant costs and detention time in the oxidation zone may be held to a minimum. The chemical oxidatns (H_2O_2, Cl_2, and O_3) will be introduced into a rapid mix zone followed by a mixing baffle detention zone to allow contact time for oxidation of the organic material. The dissolved air flotation unit will be operated at recycle rates from 5 percent to 30 percent of total flow and from 40 to 80 psig air pressure.

These data will be utilized to design and demonstrate the flow through system of 5 MGD capacity to be evaluated in Milwaukee, Wisconsin.

INQUIRIES: *Contact the* Storm and Combined Sewer Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
633 Indiana Avenue, N.W.
Washington, D. C. 20242

G V:

INFORMATION SHEET --

RESEARCH & DEVELOPMENT CONTRACT

This sheet describes briefly an R&D Contract awarded under Sec. 6, Federal Water Pollution Control Act (Clean Water Restoration Act).

CONTRACTOR: Hercules Incorporated
Allegany Ballistics Laboratory
Cumberland, Maryland

TITLE OF PROJECT: "Proposal for a Self-Adjusting and Self-Cleaning Filter Feasibility Study"

PROJECT SITE: Cumberland, Maryland

FEDERAL CONTRACT: $108,293 *DATE AWARDED:* October 6, 1967

PROJECT NUMBER: 14-12-39 *PPBS NO:* 1102

DESCRIPTION OF PROJECT: This project will attempt to find the effectiveness, operating difficulties and rate of a new concept of filtering combined sewage. The method proposed is a self-cleaning, self-adjusting Spiralloy filter. This filter is a flexible filament-wound structure that will function as a funnel during dry weather flow. During storm flow the fluid head causes the structure to flex and in so doing becomes permeable. It then acts as a filter which concentrates the impurities in the flow to the waste treatment plant while releasing the excess fluid to the receiving water.

Bench and scale models will be used to evaluate the method at a sewage treatment plant. In addition to the usual parameters measured for effectiveness, structural strength and fatigue properties will also be investigated to determine the extent to which the method can be developed for practical application.

The project has been completed. Final Report received.

INQUIRIES: *Contact the* Storm and Combined Sewer Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
633 Indiana Avenue, N.W.
Washington, D. C. 20242

INFORMATION SHEET --

RESEARCH & DEVELOPMENT CONTRACT

This sheet describes briefly an R&D Contract awarded under Sec. 6, Federal Water Pollution Control Act (Clean Water Restoration Act).

CONTRACTOR: Allis Chalmers
Milwaukee, Wisconsin

TITLE OF PROJECT: "Design, Construction, Operation and Evaluation of a Demonstration Waste Treatment Device Termed the 'Rotating Biological Contactor' "

PROJECT SITE: Milwaukee, Wisconsin

FEDERAL CONTRACT: $388,526

DATE AWARDED: September 28, 1967

PROJECT NUMBER: 14-12-24

PPBS NO: 1102

DESCRIPTION OF PROJECT:

This project will demonstrate the applicability of a new concept of biological treatment to be applied within the sewage system. The contractor has spent several years in developing a biological treatment method related to trickling filters and activated sludge processes; the method uses power driven rotating disks as the "housing media" for biological growths. Laboratory results have indicated that greatly shortened detention periods can accomplish treatment equivalent, as compared to more conventional methods. This technique offers the potential for biological treatment of flows of greater than normal magnitude, an important factor in treating combined sewer overflows.

INQUIRIES: *Contact the* Storm and Combined Sewer Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
633 Indiana Avenue, N.W.
Washington, D. C. 20242

INFORMATION SHEET --

RESEARCH & DEVELOPMENT CONTRACT

This sheet describes briefly an R&D Contract awarded under Sec. 6, Federal Water Pollution Control Act (Clean Water Restoration Act).

CONTRACTOR: Cornell, Howland, Hayes and Merryfield, Engineers and Planners
1600 Western Avenue
Corvallis, Oregon

TITLE OF PROJECT: "Primary Treatment of Storm Water Overflow from Combined Sewers by High Rate Fine Mesh Screens"

PROJECT SITE: Portland, Oregon

FEDERAL CONTRACT: $139,331 **DATE AWARDED:** August 17, 1967

PROJECT NUMBER: 14-12-121 **PPBS NO:** 1102

DESCRIPTION OF PROJECT: This project will include the design, construction, demonstration and evaluation of the performance of high rate, fine mesh vibrating screens for removal of solids from combined sewage.

Various attempts have been made to use vibratory screens in sewage treatment in the past. Grease formation and varying rates of flow were persistent problems. The contractor has several innovations in screen configuration and combinations to be constructed and demonstrated which may reduce these operating difficulties. If the demonstration is successful, the device will be used in normal sewage and at some industrial treatment plants as well as overflow points in combined collection systems.

Development of such devices, which are compact and adaptable, are needed for primary treatment of excess combined sewage under the constraints urban land use and low initial cost.

INQUIRIES: *Contact the* Storm and Combined Sewer Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
633 Indiana Avenue, N.W.
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INFORMATION SHEET ‒ ‒

RESEARCH & DEVELOPMENT CONTRACT

This sheet describes briefly an R&D Contract awarded under Sec. 6, Federal Water Pollution Control Act [Clean Water Restoration Act].

CONTRACTOR: **Dow Chemical Company**
Midland, Michigan

TITLE OF PROJECT: **"Demonstration and Evaluation of Polymeric Additives in the Treatment of Storm Water Overflow"**

PROJECT SITE: **Detroit, Michigan**

FEDERAL CONTRACT: $700,000 *DATE AWARDED:* August 8, 1967

PROJECT NUMBER: 14-12-9 *PPBS NO:* 1102

DESCRIPTION OF PROJECT:

This project involves a two year study of the use of polymeric chemicals to control pollution from combined sewer overflows. The project will be carried out at Milk River Pump Station in suburban Detroit, Michigan. This installation, which serves an area of about 3700 acres, includes a 3.5 MG detention basin. The project will include complete development of hydrological information for the demonstration area.

Flocculant studies will be carried out on both laboratory and full scale to demonstrate the effect of the use of polymeric flocculants. A demonstration of the effectiveness of disinfectants, both with and without polymers, will be completed on both pilot plant and laboratory scales.

A major part of the project will be the fabrication of a model of the existing basin. This model will be tested concurrently with the full scale basin to validate its use for model extrapolation. An optimized model will be conceived, built and tested as a design for sedimentation basins incorporating chemical flocculation.

INQUIRIES: Contact the

Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
633 Indiana Avenue, N.W.
Washington, D. C. 20242

INFORMATION SHEET——

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act(Clean Water Restoration Act).

GRANTEE: Borough of New Providence, New Jersey

TITLE OF PROJECT: "Utilization of High Rate Trickling Filters for Treatment of Combined Sewer Overflows"

PROJECT SITE: New Providence, N.J. **DATE AWARDED:** June 16, 1967

FEDERAL GRANT: $474,000 **TOTAL EST. PROJ. COST:** $1,187,680

PROJECT NUMBER: 34-NJ-1 **PPBS NO.** 1102

DESCRIPTION OF PROJECT:

Two high rate trickling filters will be installed to accommodate and treat the extremely wide range in volume of overflows which occur during periods of rainfall. Overflows are presently discharged untreated to the receiving waters, causing organic and bacterial pollution. Adaptation of this conventional treatment method to adverse operating conditions to achieve treatment of combined sewage prior to discharge will be demonstrated. One trickling filter will be constructed with a plastic filter medium; the other, with conventional trap rock or stone filter medium. Following the filters, facilities will be provided to add polyelectrolytes and other chemicals to improve sedimentation efficiency in the final settling tank, also as a part of this project. Chlorination facilities will disinfect the final effluent.

The facilities will be operated so as to maintain biological growth on the filters during dry weather periods, making the filters effective during periods of overflow. A monitoring program will thoroughly evaluate the operation and effectiveness of the separate treatment units as well as the overall effectiveness of the entire installation. The system operation will be varied so as to develop the most effective and economical plant operation to achieve the desired results.

INQUIRIES: *Contact the* Storm and Combined Sewer Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
633 Indiana Ave. N.W.
Washington, D. C. 20242

INFORMATION SHEET --

RESEARCH & DEVELOPMENT CONTRACT

This sheet describes briefly an R&D Contract awarded under Sec. 6, Federal Water Pollution Control Act (Clean Water Restoration Act).

CONTRACTOR: Acoustica Associates, Inc.
Los Angeles, California

TITLE OF PROJECT: "A Study of the Feasibility of the Use of Ultrasonic Filtration in Treating the Overflows from Combined and/or Storm Sewers"

PROJECT SITE: Los Angeles, California

FEDERAL CONTRACT: $75,693

DATE AWARDED: June 8, 1967

PROJECT NUMBER: 14-12-23

PPBS NO: 1102

DESCRIPTION OF PROJECT: The project consists of demonstrating the feasibility of using ultrasonic techniques to treat water overflows from combined and/or storm sewers.

This new concept consists of irradiating--with acoustic energy--the liquid surrounding a sintereel metal filter element. This application of acoustic energy significantly enhances the performance of the filter. This new ultrasonic filter system, when applied to sewage water treatment plants, may enable significant reductions in overall sewage plant size and cost.

The investigators will determine and demonstrate the technical and economic factors involved in the use of the ultrasonic filtration systems in their treatment of water overflows from combined and/or storm sewer systems.

The project has been completed. Final Report received.

INQUIRIES: *Contact the* Storm and Combined Sewer Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
633 Indiana Avenue, N.W.
Washington, D. C. 20242

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INFORMATION SHEET --

RESEARCH & DEVELOPMENT CONTRACT

This sheet describes briefly an R&D Contract awarded under Sec. 6, Federal Water Pollution Control Act (Clean Water Restoration Act).

CONTRACTOR: American Public Works Association
Chicago, Illinois

TITLE OF PROJECT: "The Problems of Combined Sewer Facilities and Overflows in United States Communities"

PROJECT SITE: Chicago, Illinois

FEDERAL CONTRACT: $250,000 **DATE AWARDED:** May 17, 1967

PROJECT NUMBER: 14-12-65 **PPBS NO:** 1102

DESCRIPTION OF PROJECT: All cities having combined sewers and having a population of 25,000 or over, are to be interviewed about the status of their sewage system; approximately one-third of the cities under 25,000 were selected statistically for interview. Data are collected on sewer systems, miles, types, area, and population served by separate and combined systems and parts of system; use, type, and performance of regulators; use of treatment at overflows; planned construction of corrective measures; and other pertinent information to determine magnitudes of natural problems resulting from combined sewers and overflows.

Interviews are performed on-site by 41 interviewers each having experience and training in sanitary engineering. Also 21 State liaison representatives are assisting in evaluating problems and in obtaining satisfactory interviews.

Data recorded on questionnaires will be coded by State, region and drainage basin and correlated by populations and area served as well as by various computer outputs. A report of findings, correlations, and economic impact associated with pollution problems and solutions will be submitted.

The project has been completed. Final Report received (WP-20-11).

INQUIRIES: *Contact the* Storm and Combined Sewer Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
633 Indiana Avenue, N.W.
Washington, D. C. 20242

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INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act(Clean Water Restoration Act).

GRANTEE: City of Chicago, Department of Public Works, Chicago, Illinois

TITLE OF PROJECT: "The Lawrence Avenue Underflow Sewer System"

PROJECT SITE: Chicago, Illinois

DATE AWARDED: March 30, 1967

FEDERAL GRANT: $1,500,000

TOTAL EST. PROJ. COST: $20,021,067

PROJECT NUMBER: 31-Ill-6

PPBS NO. 1102

DESCRIPTION OF PROJECT: This project will evaluate the effectiveness of employing a deep tunnel system within a highly developed urban area to temporarily store excess combined sewer flows for return to the sewage treatment plant during off-peak hours. This demonstration will reduce the discharge of untreated combined sewage to the receiving stream and minimize overloading the waste treatment plant. Should this method of control prove to be economically feasible through the use of advanced tunneling equipment, present plans in the Chicago Metropolitan Area envisions a vast network of deep tunnels for ultimate control of all waters in excess of that which can be conducted by the existing drainage systems.

INQUIRIES: ***Contact the*** Storm and Combined Sewer Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
633 Indiana Ave. N.W.
Washington, D. C. 20242

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act(Clean Water Restoration Act).

GRANTEE: City of New York, Department of Public Works
Municipal Building
New York, New York 10007

TITLE OF PROJECT: "Wards Island Water Pollution Control Plant Ponsar Flow Regulating Siphon"

PROJECT SITE: New York City

DATE AWARDED: March 30, 1967

FEDERAL GRANT: $167,250

TOTAL EST. PROJ. COST: $223,000

PROJECT NUMBER: 25-NY-1

PPBS NO. 1102

DESCRIPTION OF PROJECT:

A unique flow regulating device, called the Ponsar Regulatory, will be installed and evaluated in the New York Sewerage System. The function of the regulator is to deliver a predetermined maximum volume of combined sewage to the interceptor sewer from the drainage area collector system, with the objective of evening-out the hydraulic load on the sewage treatment plant for increased operating efficiency and to decrease the possibility that, during high flows, inadequately treated sewage would "overflow" the plant and discharge directly into streams. The function and capabilities of the device to contribute to improved sewerage system flow control will be evaluated.

The regulator operates on a siphon principle wherein the flow is proportional to the sum of the hydrostatic and differential pressure heads. The device is constructed so that the total pressure difference will remain constant after a predetermined hydrostatic head has been reached and surpassed.

Also, an adjacent existing conventional regulator will be monitored for direct comparison of performance under similar conditions.

INQUIRIES: *Contact the* Storm and Combined Sewer Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
633 Indiana Ave. N.W.
Washington, D. C. 20242

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INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act(Clean Water Restoration Act).

GRANTEE: City of Shelbyville, Illinois

TITLE OF PROJECT: "Systems Approach to Combined Sewer Storm Water Overflow Pollution Abatement"

PROJECT SITE: Shelbyville, Illinois **DATE AWARDED:** March 30, 1967

FEDERAL GRANT: $440,000 **TOTAL EST. PROJ. COST:** $1,446,760

PROJECT NUMBER: 24-Ill-4 **PPBS NO.** 1102

DESCRIPTION OF PROJECT:

A demonstration of a systems approach to pollution abatement is the goal of this project. The effectiveness of treating combined sewer overflows from small drainage areas in three types of detention and treatment units will be evaluated. These individual units will be coordinated into a total control system for the community.

Units to be installed and evaluated under the grant include:

(1) A storm overflow lagoon, designed for 5-day detention of a 10-year storm, followed by primary and secondary stabilization lagoons will receive flow from 95% of the drainage area.
(2) A storm overflow lagoon designed for 600% of dry weather flow.
(3) A primary storm holding tank for 600% of dry weather flow for 2-hr detention and equipped with a chlorinator, comminuter solids collecting facilities and a lift station to pump sludge to the treatment plant.

INQUIRIES: *Contact the*

Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
633 Indiana Ave. N.W.
Washington, D. C. 20242

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act(Clean Water Restoration Act).

GRANTEE: City of Meridian, Meridian, Idaho

TITLE OF PROJECT: "Reduction of Ground Water Infiltration into Sewers by Zone Pumping"

PROJECT SITE:	Meridian, Idaho	**DATE AWARDED:**	March 30, 1967
FEDERAL GRANT:	$18,375	**TOTAL EST. PROJ. COST:**	$25,000
PROJECT NUMBER:	29-IDA-2	**PPBS NO.**	1102

DESCRIPTION OF PROJECT: The project will evaluate the effectiveness of the use of shallow wells to draw down ground water table levels, thereby reducing sanitary sewer infiltration, permitting better waste treatment efficiency and assuring greater protection of the water quality in the receiving stream. High water tables in the case of Meridian is caused by irrigation in the surrounding areas. This is a common situation in this region and should this demonstration prove to be an economical solution, there is considerable potential for application of this method.

INQUIRIES: *Contact the* Storm and Combined Sewer Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
633 Indiana Ave. N.W.
Washington, D. C. 20242

INFORMATION SHEET --

RESEARCH & DEVELOPMENT CONTRACT

This sheet describes briefly an R&D Contract awarded under Sec. 6, Federal Water Pollution Control Act (Clean Water Restoration Act).

CONTRACTOR: **Aerojet-General Corporation**
Environmental Systems Division
El Monte, California

TITLE OF PROJECT: **"A Method for Assessing the Extent of Pollution from Stormwater Runoff from an Urban Area"**

PROJECT SITE: **Sacramento, California**

FEDERAL CONTRACT: **$402,594.00** *DATE AWARDED:* **June 29, 1968**

PROJECT NUMBER: **14-12-197** *PPBS NO:* **1102**

DESCRIPTION OF PROJECT:

This 15 month study will investigate the combined sewer problems in Sacramento, California. Seven potential control and/or treatment systems will be explored to determine applicability as solutions to the problems defined by field investigation. They include: high rate cyclone and air flotation treatment, rapid flow combustible filter, pressure sewers, temporary storage, deep tunnel system, stabilization ponds, and sewer separation. Preliminary plans and specifications will be prepared for each of the systems with a cost/effectiveness evaluation to measure the capability of each system to correct the pollution problems resulting from combined sewer overflows. Economic and social impact studies will be included.

A combined sewer overflow data collection and analysis program, including rainfall-runoff-quality relationships will be established at several locations.

INQUIRIES: *Contact the* **Storm and Combined Sewer Pollution Control Branch**
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
633 Indiana Avenue, N.W.
Washington, D. C. 20242

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INFORMATION SHEET — —

RESEARCH & DEVELOPMENT CONTRACT

This sheet describes briefly an R&D Contract awarded under Sec. 6, Federal Water Pollution Control Act [Clean Water Restoration Act].

CONTRACTOR: **Metcalf & Eddy, Inc. Engineers**
1029 Corporation Way
Palo Alto, California 94303

TITLE OF PROJECT: **"Engineering Investigation of the East Bay Municipal Utility District of the San Francisco Bay Area (Oakland)**

PROJECT SITE: **Oakland, California**

FEDERAL CONTRACT: **$141,300.00** *DATE AWARDED:* **June 29, 1968**

PROJECT NUMBER: **14-12-407** *PPBS NO:* **1102**

DESCRIPTION OF PROJECT:

A fifteen (15) month study to conduct an engineering investigation of sewer infiltration problems in the East Bay Municipal Utility District of the San Francisco Bay Area (Oakland). At the present time, (due to infiltration) the sanitary sewage system functions as a combined storm-sanitary system during wet weather. Sewage treatment plant flows rise to 5 times dry weather flow resulting in a great deal of by-passing. Problem areas and causes will be delineated and alternative engineering solutions will be developed, including determination of both technical and economic feasibility. Generalized cost curves will be developed for the alternates. Applicability of solutions to other areas with similar problems will be considered.

A representative data collection program will be conducted. Approximately twenty flow gaging stations, five sampling sites and a rain gage network will be utilized.

INQUIRIES: *Contact the* Storm and Combined Sewer Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
633 Indiana Avenue, N.W.
Washington, D. C. 20242

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INFORMATION SHEET --

RESEARCH & DEVELOPMENT CONTRACT

This sheet describes briefly an R&D Contract awarded under Sec. 6, Federal Water Pollution Control Act [Clean Water Restoration Act].

CONTRACTOR: R. F. Weston
Environmental Science & Engineering Consultants
1426 Lewis Lane
West Chester, Pennsylvania 19380

TITLE OF PROJECT: "Develop and Demonstrate a Method for Assessing the Extent of Pollution from Storm Water Runoff in an Urban Area"

PROJECT SITE: Washington, D. C.

FEDERAL CONTRACT: $223,514.00 *DATE AWARDED:* June 29, 1968

PROJECT NUMBER: 14-12-403 *PPBS NO:* 1102

DESCRIPTION OF PROJECT:

Roy F. Weston will conduct a twelve month study to investigate the combined sewer problems in the District of Columbia. Twenty-five square miles served by combined sewers would be included in the project area. Several alternate approaches to solution of the overflow problem will be investigated, with emphasis on chemical flocculation coupled with high-rate filtration. The "deep tunnel" storage concept will also be considered.

The Contractor will gage major streams and major overflows within the demonstration area, in conjunction with a overflow quality sampling and analysis program at selected locations.

A laboratory research program will be conducted to determine the efficiency of removing flocculated solids and associated BOD by high rate filtration of combined sewer overflows. Filtration rates of 15 or more gallons per minute per square foot are anticipated.

INQUIRIES: *Contact the* Storm and Combined Sewer Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
633 Indiana Avenue, N.W.
Washington, D. C. 20242

INFORMATION SHEET — —

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: City and County of San Francisco
Public Works Department, 260 City Hall
San Francisco, California 94102

TITLE OF PROJECT: "Treatment of Combined Sewer Overflows by the Dissolved Air Flotation Process"

PROJECT SITE: San Francisco, Calif.

DATE AWARDED: July 24, 1968

FEDERAL GRANT: $921,000

TOTAL EST. PROJ. COST: $1,463,000

PROJECT NUMBER: WPRD 258-01

PPBS NO. 1102

DESCRIPTION OF PROJECT:

The project consists of the design, construction and evaluation of a combined sewer overflow treatment facility at the Baker Street Outfall consisting of trash racks, short-term sedimentation for removal of settleable solids, dissolved air flotation for removal of particulate and liquid floatables and disinfection utilizing chlorine.

Conditions of the receiving waters will be thoroughly investigated prior to placing the facility in operation and the cost/effectiveness of the treatment facility evaluated following construction.

The character of combined sewage in the drainage area tributary to the Baker Street Outfall will be defined and the applicability of the treatment process to other outfalls in the San Francisco sewerage system assessed.

INQUIRIES: *Contact the* Storm and Combined Sewer Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
[illegible]
Washington, D. C. 20242

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: Board of County Commissioners
Montgomery County, Ohio

TITLE OF PROJECT: "The Determination of Ground Water Infiltration and the Effects of Internal Chemical Sealing of Sanitary Sewers"

PROJECT SITE: Kettering, Ohio

DATE AWARDED: August 8, 1968

FEDERAL GRANT: $96,570

TOTAL EST. PROJ. COST: $137,000

PROJECT NUMBER: WPRD 211-01-68

PPBS NO. 1102

DESCRIPTION OF PROJECT:

A demonstration program is to be carried out which will precisely identify the cause and degree of infiltration of surface and ground water into selected sewer sections. After establishing the cause and affects of this surcharging remedial action will be taken utilizing internal sewer sealing with chemicals and pressure grouting. New techniques for ehcmical application will be developed as the work progresses. After and during the sealing program effectiveness and cost data will be analyzed to establish the most effective technique and material with respect to solution of the problem and cost.

INQUIRIES: *Contact the* Storm and Combined Sewer Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
[redacted]
Washington, D. C. 20242

INFORMATION SHEET -- --

RESEARCH & DEVELOPMENT CONTRACT

This sheet describes briefly an R&D Contract awarded under Sec. 6, Federal Water Pollution Control Act (Clean Water Restoration Act).

CONTRACTOR: Hayes, Seay, Mattern and Mattern
Roanoke, Virginia

TITLE OF PROJECT: "Engineering Investigation of Combined Sewer Overflow Problem"

PROJECT SITE: Roanoke, Virginia

FEDERAL CONTRACT: $104,191 **DATE AWARDED:** August 16, 1968

PROJECT NUMBER: 14-12-200 **PPBS NO:** 1102

DESCRIPTION OF PROJECT: A twelve (12) month study to investigate overloaded sewer problems in Roanoke, Virginia. Storm waters enter the sanitary sewer system causing overloading of both the collection system and the sewage treatment facilities. By-passes enter the Roanoke River and reach Smith Mountain Lake, a hydro-electric power development which is also used extensively for water-oriented recreation. The overflow problems of the area will be subjected to a detailed engineering evaluation. Preliminary plans with cost estimates for remedial measures will be prepared.

INQUIRIES: *Contact the* Storm and Combined Sewer Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
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Washington, D. C. 20242

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INFORMATION SHEET — —

RESEARCH & DEVELOPMENT CONTRACT

This sheet describes briefly an R&D Contract awarded under Sec. 6, Federal Water Pollution Control Act [Clean Water Restoration Act].

CONTRACTOR: **American Public Works Association**
1313 East 60th Street
Chicago, Illinois

TITLE OF PROJECT: **"Analysis of Regulator Facilities, Their Application and Maintenance Practices"**

PROJECT SITE: **Chicago, Illinois**

FEDERAL CONTRACT: **$65,000** ***DATE AWARDED:*** **August 30, 1968**

PROJECT NUMBER: **14-12-456** ***PPBS NO:*** **1102**

DESCRIPTION OF PROJECT:

A seventeen month analysis of combined sewer overflow regulator facilities to determine what improvements are needed to increase the efficacy, resulting in reduced pollution. The final report will serve as a community working guide as it will establish the state of the art by (1) providing practical and useful information concerning design criteria and operational and maintenance practices, (2) stressing the application of newly developed or improved materials and technology presently available, and (3) identifying areas for future research and development. The APWA Research Foundation will finance up to 25% of the total cost through financial participation by public agencies such as cities and counties at the local level.

INQUIRIES: *Contact the* **Storm and Combined Sewer Pollution Control Branch**
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
[redacted]
Washington, D. C. 20242

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INFORMATION SHEET --

RESEARCH & DEVELOPMENT CONTRACT

This sheet describes briefly an R&D Contract awarded under Sec. 6,(a2) Federal Water Pollution Control Act [Clean Water Restoration Act].

CONTRACTOR: Black, Crow & Eidsness
1261 Spring Street, N.W.
Atlanta, Georgia 30309

TITLE OF PROJECT: "An Engineering Investigation of Combined Sewer Problems of Atlanta, Georgia"

PROJECT SITE: Atlanta, Georgia

FEDERAL CONTRACT: $263,826 ***DATE AWARDED:*** September 5, 1968

PROJECT NUMBER: 14-12-458 ***PPBS NO:*** 1102

DESCRIPTION OF PROJECT:

A detailed engineering investigation and comprehensive technical study will be carried out in the South River Drainage Basin of Atlanta, Georgia to: (1) evaluate the benefits, economics and feasibility of alternate schemes including separation, collection, storage and treatment for overflow or bypassed waste water from combined sewer systems, and the discharges of storm water collection systems, (2) correlate pollution load data with type of zoning and detailed land use and (3) develop methodology to relate storm water drainage in both quality and quantity to zoning classification.

INQUIRIES: *Contact the* Storm and Combined Sewer Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
[redacted]
Washington, D. C. 20242

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INFORMATION SHEET --

RESEARCH & DEVELOPMENT CONTRACT

This sheet describes briefly an R&D Contract awarded under Sec. 6, Federal Water Pollution Control Act [Clean Water Restoration Act].

CONTRACTOR: FMC Corporation
Central Engineering Laboratories
1185 Coleman Avenue
Santa Clara, California 95052

TITLE OF PROJECT: "Evaluation of a Periodic Flushing System for Combined Sewer Cleaning"

PROJECT SITE: Santa Clara, California

FEDERAL CONTRACT: $323,600 **DATE AWARDED:** October 9, 1968

PROJECT NUMBER: 14-12-466 **PPBS NO:** 1102

DESCRIPTION OF PROJECT:

The objective of this 13-month project is to perform Phase II of a three-phase program to demonstrate the feasibility of reducing pollution from combined sewer storm overflows by means of periodic flushing during dry weather. Included in the total program are study of the theoretical basis for correlating flushing requirements for various sewer conditions, verification of the hydraulic requirements for flushing by test, and installation and systematic operation of flushing equipment in a significant area of an actual combined sewer system.

The test equipment to be built in Phase II consists of 12" and 18" diameter test sewers about 800 feet long, supported above ground so the slope can be adjusted. Flush tanks will be provided at three points along the test sewers.

Based on extensive tests with this facility, system design procedures and criteria for application of sewer flushing systems will be determined. Flushing equipment for use in an actual field environment will be designed and built.

INQUIRIES: *Contact the* Storm and Combined Sewer Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
[redacted].
Washington, D. C. 20242

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INFORMATION SHEET --

RESEARCH & DEVELOPMENT CONTRACT

This sheet describes briefly an R&D Contract awarded under Sec. 6, Federal Water Pollution Control Act (Clean Water Restoration Act).

CONTRACTOR: The Franklin Institute
Benjamin Franklin Parkway
Philadelphia, Pennsylvania 19103

TITLE OF PROJECT: "Selected Abstracts of Storm Water Discharges and Combined Sewer Overflows"

PROJECT SITE: Philadelphia, Pennsylvania

FEDERAL CONTRACT: $8,946,00 ***DATE AWARDED:*** October 18, 1968

PROJECT NUMBER: 14-12-467 ***PPBS NO:*** 1102

DESCRIPTION OF PROJECT:

The Contractor will catalog, expand and update "Storm Water Runoff from Urban Areas" April 1966, by compiling selected abstracts from published and unpublished literature covering the subject of urban runoff, from the meteorologic source, through the collection, control, treatment and/or disposal of runoff, via storm sewers, combined sewers, or surface flow and the attendant pollutional effects on all types of receiving bodies of water. A separate listing of those articles or papers pertaining to the report subject and involving pollutional effects in estuaries will be provided. Abstracting and indexing procedures will follow those of the Water Resources Scientific Information Center (OWRR).

This is a joint venture of the Office of Estuarine Studies and the Storm and Combined Sewer Pollution Control Branch.

Abstract report due December 30, 1968.

The project has been completed. Final Report received (WP-20-21).

INQUIRIES: *Contact the* Storm and Combined Sewer Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
[redacted].
Washington, D. C. 20242

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INFORMATION SHEET --

RESEARCH & DEVELOPMENT CONTRACT

This sheet describes briefly an R&D Contract awarded under Sec. 6, Federal Water Pollution Control Act (Clean Water Restoration Act).

CONTRACTOR: **Burgess & Niple, Limited**
Consulting Engineers
2015 West Fifth Avenue
Columbus, Ohio 43212

TITLE OF PROJECT: **"Engineering Investigation of Storm and Combined Sewer Pollution at Bucyrus, Ohio"**

PROJECT SITE: **Bucyrus, Ohio**

FEDERAL CONTRACT: **$136,665.00** *DATE AWARDED:* **June 27, 1968**

PROJECT NUMBER: **14-12-401** *PPBS NO:* **1102**

DESCRIPTION OF PROJECT:

A thirteen (13) month study to investigate the combined sewer problems and evaluate the benefits, economics and feasibility of collection and treatment of overflows in Bucyrus, Ohio. The problems encountered are considered to be typical of combined sewer systems in small communities with flat terrain. Plans will be formulated for solutions of the problems pinpointed during the field investigations. Development of the corrective plans will consider several storage concepts, physical and chemical treatment, partial separation of sewers where appropriate and possible sewage treatment plant modifications.

Field investigations will include monitoring of principal overflow locations, rainfall measurements, and stream gaging.

INQUIRIES: *Contact the* **Storm and Combined Sewer Pollution Control Branch**
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
633 Indiana Avenue, N.W.
Washington, D. C. 20242

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INFORMATION SHEET – –

RESEARCH & DEVELOPMENT CONTRACT

This sheet describes briefly an R&D Contract awarded under Sec. 6, Federal Water Pollution Control Act (Clean Water Restoration Act).

CONTRACTOR: **American Process Equipment Corporation**
2015 Lisenby Avenue
Panama City, Florida 32401

TITLE OF PROJECT: **"Fabrication and Evaluation of an Ultrasonic Filtration System for Treating Combined Sewer Overflows"**

PROJECT SITE: **Panama City, Florida**

FEDERAL CONTRACT: **$248,500.00** DATE AWARDED: **June 25, 1968**

PROJECT NUMBER: **14-12-195** PPBS NO: **1102**

DESCRIPTION OF PROJECT:

This fourteen month investigation will design, fabricate and demonstrate an ultrasonic filtration system of field size with a maximum capacity of 160 gpm. The potential effectiveness of this system was demonstrated in a three month feasibility study, in which a laboratory unit achieved BOD and Suspended Solids reductions of approximately 65% for a 50 micron element treating raw sewage which had only been subjected to coarse bar screens and a detritor. Ultrasonic energy can restore the filter elements to "like new" condition without necessitating frequent filter element replacements. The testing program would provide definitive quality and quantity data on system performance, reliability and cost. Pretreatment requirements will be determined and automatic operating procedures will be established. Included as a part of this proposal is a one month test program to determine the applicability of the proposed "field unit" for removal of algae from oxidation pond effluents.

INQUIRIES: *Contact the* **Storm and Combined Sewer Pollution Control Branch**
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
633 Indiana Avenue, N.W.
Washington, D. C. 20242

G.V:

INFORMATION SHEET

RESEARCH & DEVELOPMENT CONTRACT

This sheet describes briefly an R&D Contract awarded under Sec. 6, Federal Water Pollution Control Act (Clean Water Restoration Act).

CONTRACTOR: Aerojet-General Corporation
9200 East Flair Drive
El Monte, California 91734

TITLE OF PROJECT: "Role of Solids in Combined Sewage Pollution"

PROJECT SITE: San Francisco, California

FEDERAL CONTRACT: $92,605.00 DATE AWARDED: June 20, 1968

PROJECT NUMBER: 14-12-180 PPBS NO: 1102

DESCRIPTION OF PROJECT:

The purpose of the twelve-month field investigation and evaluation is directed toward determination of the feasibility and potential benefits that may be obtained through the removal of solids utilizing in-sewer screening devices. Sufficient data to permit a reasonable assessment of the anticipated removals of floatables and solid material will be obtained. The effect on chlorination requirements resulting from the solids removals will be investigated. The contractor will evaluate the relationship between the aesthetic water quality considerations and proposed State Water Quality Standards for those bodies of water receiving combined sewer overflows.

INQUIRIES: *Contact the* Storm and Combined Sewer Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
633 Indiana Avenue, N.W.
Washington, D. C. 20242

G.I:

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: City of Dallas
210 City Hall, Main and Harwood
Dallas, Texas 75201

TITLE OF PROJECT: "Stormwater Treatment Facilities"

PROJECT SITE: Dallas, Texas

DATE AWARDED: May 21, 1968

FEDERAL GRANT: $828,750

TOTAL EST. PROJ. COST: $1,105,000

PROJECT NUMBER: WPRD 35-TEX-1 (Revised)

PPBS NO. 1102

DESCRIPTION OF PROJECT:

The project consists of the design, construction and evaluation of a facility to treat overflows from sewers carrying a mixture of domestic wastewater and infiltration stormwater. Physical features include a diversion structure, pumping station, flocculation and sedimentation basins, chemical feed facilities, and a pipeline for conveyance of waste lime sludge from the municipal water treatment plant to the overflow treatment facility.

Treatment Unit #1 will include flocculation, sedimentation and polishing treatment with tube-type clarifiers; Unit #2 will include flocculation and sedimentation; Unit #3 will include high-rate sedimentation. Effluent from the facility will be chlorinated. Design flow rate will be 28 million gallons per day.

The facility will be operated and evaluated as a demonstration project for a period of one year following completion of construction.

INQUIRIES: ***Contact the*** Storm and Combined Sewer Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
633 Indiana Ave. N.W.
Washington, D. C. 20242

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act(Clean Water Restoration Act).

GRANTEE: City of Cleveland
City Hall, 601 Lakeside Avenue
Cleveland, Ohio 44114

TITLE OF PROJECT: "A Program for Demonstrating Combined Sewer Overflows Control Techniques for Water Quality Improvement and Beach Protection"

PROJECT SITE: Cleveland, Ohio

DATE AWARDED: May 3, 1968

FEDERAL GRANT: $325,162

TOTAL EST. PROJ. COST: $1,030,000

PROJECT NUMBER: WPRD 234-01-68

PPBS NO. 1102

DESCRIPTION OF PROJECT:
The project consists of the immediate application of several control and treatment methods designed to abate pollution from combined sewer overflows and control of water quality at the Edgewater and White City bathing beaches on Lake Erie in the City of Cleveland. Control and treatment measures to be applied include:

(1) Hypochlorination of combined sewer overflows and local streams contributing to pollution of beach areas.
(2) Use of polymers to reduce overflows by increasing interceptor flow capacity.
(3) Initiation of a sewer flushing program to reduce solids discharged from the drainage area tributary to the Edgewater overflow.
(4) Screening of overflows and streams.
(5) Construction of sheet piling and flexible barriers to enclose beach areas.
(6) Control of water quality within enclosed beach areas.
(7) Collection of debris and coarse solids.
(8) Miscellaneous sewerage system improvements.

INQUIRIES: *Contact the* Storm and Combined Sewer Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
633 Indiana Ave. N.W.
Washington, D. C. 20242

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act(Clean Water Restoration Act).

GRANTEE: City of Mt. Clemens, Michigan

TITLE OF PROJECT: "A Combined Sewerage Collection and Treatment Facility"

PROJECT SITE: Mt. Clemens, Michigan ***DATE AWARDED:*** February 28, 1968

FEDERAL GRANT: $500,250 ***TOTAL EST. PROJ. COST:*** $667,000

PROJECT NUMBER: 37-MICH-2 ***PPBS NO.*** 1102

DESCRIPTION OF PROJECT:

Overflows from combined sewers cause pollution of the Clinton River during wet-weather periods. The project is designed to demonstrate the feasibility of controlling such pollution by constructing three aerated "Lakelets" to serve as treatment units. The "Lakelets" will be equipped with surface aerators and operated in series. Effluent from the first two ponds will be subjected to chemical treatment and microstraining, with the final effluent from the third pond receiving similar treatment and chlorination prior to discharge to the Clinton River. The project will explore the potential of the Lakelets as recreation facilities for boating and fishing as a part of park operation.

INQUIRIES: ***Contact the*** Storm and Combined Sewer Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
633 Indiana Ave. N.W.
Washington, D. C. 20242

INFORMATION SHEET --

RESEARCH & DEVELOPMENT CONTRACT

This sheet describes briefly an R&D Contract awarded under Sec. 6, Federal Water Pollution Control Act (Clean Water Restoration Act).

CONTRACTOR: The Western Company
Richardson, Texas

TITLE OF PROJECT: "Materials to Reduce or Eliminate Infiltration into Sewerage Systems"

PROJECT SITE: Richardson, Texas

FEDERAL CONTRACT: $96,702 **DATE AWARDED:** January 1968

PROJECT NUMBER: 14-12-146 **PPBS NO:** 1102

DESCRIPTION OF PROJECT:

This project will involve the development and demonstration of the effectiveness of sealant materials capable of reducing or eliminating infiltration. Water entering sewers through leaky joints, broken pipe and because of faulty construction causes sewers to carry excessive flows, which, in turn, requires relief through planned overflows when sewer capacity is exceeded. Such untreated overflows cause pollution of the receiving waters. Better sealing materials and methods could contribute significantly to reduction of pollution from these sources.

Various materials will be investigated and modified to overcome the inherent disadvantages of existing sealants. Full scale laboratory testing will demonstrate the effectiveness of the developed sealants. Cost-effectiveness studies will be conducted. Equipment for sealant application will be investigated to determine availability and the required modifications for use of the improved sealants.

The project has been completed. Final Report received (WP-20-18).

INQUIRIES: *Contact the* Storm and Combined Sewer Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
633 Indiana Avenue, N.W.
Washington, D. C. 20242

G.I: 101867

INFORMATION SHEET — —

RESEARCH & DEVELOPMENT CONTRACT

This sheet describes briefly an R&D Contract awarded under Sec. 6, Federal Water Pollution Control Act [Clean Water Restoration Act].

CONTRACTOR: Fram Corporation
Research Division
East Providence, Rhode Island

TITLE OF PROJECT: "Feasibility Investigation of a Self Cleaning Strainer and a Self Cleaning Filter"

PROJECT SITE: East Providence, Rhode Island

FEDERAL CONTRACT: $32,733 **DATE AWARDED:** December 27, 1967

PROJECT NUMBER: 14-12-17 **PPBS NO:** 1102

DESCRIPTION OF PROJECT: This proposal will investigate the feasibility of treating excess combined and storm sewage by using a modified version of an existing type of strainer so as to enhance the "Self-Cleaning" aspects of the strainer. This will be followed by a "self-cleaning", non-pressurized, rotating-drum diatomaceous earth filter. The new techniques involved will be investigated and evaluated. This will include the operating methods, operating performance and operating effectiveness under the variables of quality and quantity of waste water treated, equipment design changes, feed rates for diatomaceous earth and other factors.

These evaluations will be carried out in bench and model scale tests. The final section of the investigation will be to determine the scale-up factors. These will include cost, anticipated difficulties and probable effectiveness.

The project has been completed. Final Report received (WP-20-16).

INQUIRIES: *Contact the* Storm and Combined Sewer Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
633 Indiana Avenue, N.W.
Washington, D. C. 20242

INFORMATION SHEET --

RESEARCH & DEVELOPMENT CONTRACT

This sheet describes briefly an R&D Contract awarded under Sec. 6, Federal Water Pollution Control Act [Clean Water Restoration Act].

CONTRACTOR: Glenfield & Kennedy, Inc.
King of Prussia, Pennsylvania

TITLE OF PROJECT: "Microstraining, Ozonization & Chlorination Pilot Tests on Combined Sewer Overflows"

PROJECT SITE: Philadelphia, Pennsylvania

FEDERAL CONTRACT: $186,886 ***DATE AWARDED:*** December 27, 1967

PROJECT NUMBER: 14-12-136 ***PPBS NO:*** 1102

DESCRIPTION OF PROJECT: The project will involve the construction, operation, and evaluation of the use of microstrainers for treating combined sewer overflows. Microstrainers are currently used in raw water supply treatment and for polishing sewage treatment plant effluent. The demonstration site will be on part property in the City of Philadelphia, Pa.

The applicability of ozone to disinfect flows will also be evaluated. Improved techniques for disinfection are also desired. Ozone is used fairly extensively in Europe for water supply disinfection, but has had only limited use in this country.

Evaluation of screening and filtration methods is a very important facet of the total Storm/Combined Sewer Program since such treatment has the potential for removing large amounts of organic and inorganic solids contained in the overflows. Such solids are major pollutants during storm periods.

INQUIRIES: *Contact the* Storm and Combined Sewer Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
633 Indiana Avenue, N.W.
Washington, D. C. 20242

G.N:

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act(Clean Water Restoration Act).

GRANTEE: City of New York

TITLE OF PROJECT: "Evaluation of Spring Creek Auxiliary Pollution Control Project"

PROJECT SITE: New York City, New York ***DATE AWARDED:*** December 26, 1967

FEDERAL GRANT: $843,750 ***TOTAL EST. PROJ. COST:*** $1,126,000

PROJECT NUMBER: 36-NY-2 ***PPBS NO.*** 1102

DESCRIPTION OF PROJECT:

Overflows from combined sewers contribute significantly to the pollution of Jamaica Bay, New York City in constructing a major combined sewage treatment facility "Spring Creek Auxiliary Pollution Control Project" specifically designed to provide sedimentation and chlorination treatment to combined sewage. The demonstration project will establish pre-construction water quality conditions in Jamaica Bay, Spring Creek area, and location of all sources contributing to pollution of the Bay. Characterization of parameters that measure the effects of combined sewers will be apart of the investigations. Following construction the effectiveness of the combined sewage treatment facilities will be evaluated. It is anticipated that the Spring Creek facility will serve as a prototype for additional projects leading to an upgrading of the quality of Jamaica Bay waters.

INQUIRIES: ***Contact the*** Storm and Combined Sewer Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
633 Indiana Ave. N.W.
Washington, D. C. 20242

GWerdig 101767

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act(Clean Water Restoration Act).

GRANTEE: City of Milwaukee, 841 North Broadway, Milwaukee, Wisconsin 53202

TITLE OF PROJECT: "Humbolt Avenue Overflow Detention and Chlorination Facility"

PROJECT SITE: Milwaukee, Wisconsin
DATE AWARDED: October 15, 1966
FEDERAL GRANT: $1,468,589
TOTAL EST. PROJ. COST: $2,118,118
PROJECT NUMBER: 10-WISC-1
PPBS NO. 1102

DESCRIPTION OF PROJECT: The project will demonstrate the effectiveness of a detention tank including chlorination facilities for the treatment of combined sewer overflows from a 570 acre urban area. The tank influent will be screened. The tank will be designed to provide a minimum of 15 minutes detention time for sedimentation and chlorination. After an overflow the sludge deposits and remaining wastewater will be pumped to a nearby interceptor sewer for treatment at an existing treatment plant.

Because of the complex nature of the combined sewer system, eight in-system monitoring stations will record flows and sample the overflows.

The overflows presently discharge to the Milwaukee River, seriously impairing most beneficial water uses. Three river monitoring stations will record the dissolved oxygen and temperature, and provide for the collection of river samples to determine the effects of the proposed project on the river water quality.

All data will be analyzed to relate the effectiveness with operation and costs, inclusive of benefits received. Results will be utilized to develop a method for optimizing the design of such facilities and establish relationships to other approaches for achieving comparable results.

INQUIRIES: *Contact the* Storm and Combined Sewer Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
633 Indiana Ave. N.W.
Washington, D. C. 20242

GWerdig 12767

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act(Clean Water Restoration Act).

GRANTEE: City of Detroit, Board of Water Commissioners
735 Randolph Street, Detroit, Michigan

TITLE OF PROJECT: "System Monitoring and Remote Control"

PROJECT SITE: Detroit, Michigan

DATE AWARDED: September 14, 1966

FEDERAL GRANT: $1,000,000

TOTAL EST. PROJ. COST: $2,113,000

PROJECT NUMBER: 4-MICH-1

PPBS NO. 1102

DESCRIPTION OF PROJECT: Reduction in stream pollution caused by combined sewer overflows by installation of modern control equipment for sewage flows thereby maximizing the use of storage within the existing sewer system. The project consists of installation of new power operated diversionary overflow structures and automatic control instrumentation. The instrumentation includes devices for determination of waste water quality, flow measurement, rainfall data, conduit liquid level sensing, and remote operation of diversion gates. Telemetering will be provided to transmit and record data collected by the instruments and to provide feed back data relative to status of the remote controlled units. Investigations will be made to observe the modifications and additions to the system, to analyze and evaluate the data collected, and to determine the overall effectiveness of the demonstration.

INQUIRIES: ***Contact the*** Storm and Combined Sewer Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
633 Indiana Ave. N.W.
Washington, D. C. 20242

GWerdig 12867

INFORMATION SHEET

Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Grant, under Section 6a1, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR: (Name and Address) The City of LaSalle, Illinois

PROJECT DIRECTOR: (Name and Address)
Chamlin and Associates
3017 Fifth Street
Peru, Illinois 61354

TITLE OF PROJECT: "The Construction and Technical Evaluation of the Various Aspects of an Aluminum Storm Sewer System"

PROJECT SITE: LaSalle, Illinois

PROGRAM (PROJECT) NUMBER:
11032DTI

DATE OFFERED:
June 13, 1969

DATE ACCEPTED (AWARDED):
June 23, 1969

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: 6/23/69	Total $958,068 $	$432,276
Thru: 11/23/72	Eligible $476,368	

DESCRIPTION OF PROJECT:

The City of LaSalle will demonstrate the correction of combined sewer overflow problems by constructing a separate storm drainage system for a portion of the city. Engineering study indicates that this is the most economical solution for LaSalle. The development and demonstration aspects will be:

(a) The installation and evaluation of performance, durability and dependability of various size corrugated aluminum pipe, (b) prototype development and evaluation of improved joint couplers, tapping saddles, catch basins and manholes, (c) a detailed cost analysis to allow comparison of aluminum pipe with commonly used sewer material, and (d) a construction practice evaluation for future installation guidance.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: American Public Works Association, 1313 E. 60th Street, Chicago, Ill.

TITLE OF PROJECT: "Study of Methods for Reducing Water Pollution from Storm Sewer and Combination Discharges Through Defined Public Works Practice"

PROJECT SITE: Chicago, Illinois **DATE AWARDED:** October 1, 1966

FEDERAL GRANT: $104,000 **TOTAL EST. PROJ. COST:** $104,000

PROJECT NUMBER: WA 66-23 **PPBS NO.** 1103

DESCRIPTION OF PROJECT: The Chicago Metropolitan Area is to be studied and data collected which would lead to conclusions that define the control and operational procedures required to reduce the dominant pollutional factors. Recommendations will be made which will lead to improvements in present methods, the initiation of new methods in the field of public sanitation, programs aimed to develop public awareness, and to secure citizen cooperation in reducing and eliminating pollution factors. Specific investigations will include: (1) community ordinance survey, (2) salt concentrations, (3) air pollution, (4) litter field studies, (5) chromate concentrations, (6) use of pesticides, herbacides and chemical fertilizers, (7) catch basin cleaning frequency requirements, (8) sewer cleaning frequency requirements, (9) street sweeping and flushing efficiencies, and (10) rooftop pollution.

The project has been completed. Final Report received (WP-20-15).

INQUIRIES: *Contact the* Storm and Combined Sewer Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
633 Indiana Ave. N.W.
Washington, D. C. 20242

GWerdig 12867

INFORMATION SHEET --

RESEARCH & DEVELOPMENT CONTRACT

This sheet describes briefly an R&D Contract awarded under Sec. 6, Federal Water Pollution Control Act (Clean Water Restoration Act).

CONTRACTOR: **Henningson, Durham & Richardson**
3555 Fornam Street
Omaha, Nebraska 68131

TITLE OF PROJECT: **"An Engineering Investigation of Storm and Combined Sewer Problems"**

PROJECT SITE: **Des Moines, Iowa**

FEDERAL CONTRACT: **$301,200.00** *DATE AWARDED:* **June 28, 1968**

PROJECT NUMBER: **14-12-402** *PPBS NO:* **1103**

DESCRIPTION OF PROJECT:

This fifteen month study pertains to engineering investigations necessary to assess combined sewer overflow and stormwater discharge problems in Des Moines, Iowa with the development of recommended applicable solution. Field investigation will be utilized to pinpoint and assess existing problems. Recommended solutions will be selected from a number of alternate approaches based on cost and expected effectiveness in controlling and/or treating the discharges. Alternate solutions to be included are surge or retention basins, percolation basins, mechanical clarification facilities, utilization of flood control facilities and existing open surface channels. Preliminary estimates for sewer separation will be developed.

The contractor will conduct a stream and combined sewer sampling and analysis program, coupled with a rainfall network for development of rainfall-runoff-quality relationships.

INQUIRIES: *Contact the* **Storm and Combined Sewer Pollution Control Branch**
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
633 Indiana Avenue, N.W.
Washington, D. C. 20242

G.4:

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: City of South St. Paul, Minnesota

TITLE OF PROJECT: Demonstration Project for Temporary Detention of Storm and Combined Sewage in Natural Underground Formations

PROJECT SITE: South St. Paul, Minn. **DATE AWARDED:** July 22, 1968

FEDERAL GRANT: $385,000 **TOTAL EST. PROJ. COST:** $380,000

PROJECT NUMBER: WPRD 249-01 **PPBS NO.** 1103

DESCRIPTION OF PROJECT:

Natural permeable underground strata in the South St. Paul area will be used to demonstrate their capacity for the temporary storage of both storm water and combined storm water and sewage during periods of storm runoff. Deposits of alluvium, or gravel, which are approximately 100 feet in depth are to be located for this purpose by drilling in favorable locations.

Prior to introduction of the waste waters into the ground, they must be treated by removal of suspended solids, and will be chlorinated, if necessary, to eliminate danger of contaminating adjacent sources of water supply. The capacity for rapid pre-treatment and movement of large volumes of waste water into the ground must be demonstrated if the system is to prove feasible.

Waste water thus entering the ground during storms will be pumped out over a period of several months. If the quality of this water meets the required standards, it can be returned directly to the streams. Otherwise, it will be transported to the sewage treatment plant.

Prior to introduction of waste water into the underground formation, city water will be used to test the direction, rate of movement, and quality of water in the ground through use of observation wells.

INQUIRIES: *Contact the* Storm and Combined Sewer Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
[redacted]
Washington, D. C. 20242

INFORMATION SHEET --

RESEARCH & DEVELOPMENT CONTRACT

This sheet describes briefly an R&D Contract awarded under Sec. 6, Federal Water Pollution Control Act [Clean Water Restoration Act].

CONTRACTOR: Hittman Associates, Inc.
4715 E. Wanash Avenue
Baltimore, Maryland 21215

TITLE OF PROJECT: "System Study Design and Evaluation of Local Storage, Treatment and Reuse of Storm Water"

PROJECT SITE: Columbia, Howard County, Maryland

FEDERAL CONTRACT: $197,724 **DATE AWARDED:** July 25, 1967

PROJECT NUMBER: 14-12-20 **PPBS NO:** 1103

DESCRIPTION OF PROJECT:

Storm water runoff from urban areas can cause significant pollution of surface waters. The project to be carried out in Columbia, Maryland, will investigate the feasibility of utilizing collection of runoff, storage, treatment and possible reuse as a means of controlling pollution caused by stormwater runoff. Various types of local storage will be explored and the potential of reusing stored waters, including consideration of sanitary legal, and socio-economic aspects will be evaluated. If the proposed approach is determined to be feasible, preliminary engineering design of an operable system will be prepared.

The project has been completed. Final Report received.

INQUIRIES: *Contact the* Storm and Combined Sewer Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
633 Indiana Avenue, N.W.
Washington, D. C. 20242

GW:102067

INFORMATION SHEET --

RESEARCH & DEVELOPMENT CONTRACT

This sheet describes briefly an R&D Contract awarded under Sec. 6, Federal Water Pollution Control Act [Clean Water Restoration Act].

CONTRACTOR: **AVCO-Economic Systems Corporation**
1701 K Street, N. W.
Washington, D. C. 20006

TITLE OF PROJECT: **"Develop the Relation between Land-Use Practices and Influence of Pollution in Urban Storm Water"**

PROJECT SITE: **Tulsa, Oklahoma**

FEDERAL CONTRACT: **$114,300.00** *DATE AWARDED:* **June 13, 1968**

PROJECT NUMBER: **14-12-187** *PPBS NO:* **1103**

DESCRIPTION OF PROJECT:

AVCO proposes to develop the relationship between land-use practices and incidence of pollution in urban stormwater runoff. Means of analyzing and evaluating the extent and degree of pollution resulting from urban areas of varying land-use patterns will be developed utilizing Tulsa, Oklahoma as the subject area. Based on the findings of field investigations, a recommended program for corrective measures emphasizing regulatory controls of the area, such as improved urban planning, zoning and regulations of land-use will be developed.

During the 18 month study, AVCO will monitor the storm water runoff from fifteen sampling sites. The data will be stored in STORET and subsequently used in the mathematical model along with the land-use data. An IBM Sytem /360 will be used for the mathematical model for pollution incidence determinations. Mathematical relationships will make use of a regression technique and principal component analysis.

INQUIRIES: Contact the **Storm and Combined Sewer Pollution Control Branch**
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
633 Indiana Avenue, N.W.
Washington, D. C. 20242

G.N:

INFORMATION SHEET — —

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act(Clean Water Restoration Act).

GRANTEE: The Regents of the University of Michigan
Ann Arbor, Michigan

TITLE OF PROJECT: "Rainfall-Runoff Relations on Urban (and Rural) Areas"

PROJECT SITE: Detroit, Michigan

DATE AWARDED:

FEDERAL GRANT: $18,986

TOTAL EST. PROJ. COST: $20,085 (1968-69)

PROJECT NUMBER: WP-00834-04

PPBS NO. 1104

DESCRIPTION OF PROJECT:

Objectives of the project are to gain a better understanding of the factors which control the relationship between storm rainfall, or snow melt, and the resulting storm runoff, and to determine the effect of urbanization on this runoff process. The benefits would include prevention of flood damage by means of improved design of storm sewers and waterways, and would provide data needed for the improved design and operation of facilities for control of pollution due to storm water and/or combined sewage.

INQUIRIES: *Contact the* Storm and Combined Sewer Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
633 Indiana Ave. N.W.
Washington, D. C. 20242

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6,a(2) Federal Water Pollution Control Act(Clean Water Restoration Act).

GRANTEE: City of Tualatin, Oregon

TITLE OF PROJECT: Tertiary Treatment of Combined Domestic/Industrial Wastes

PROJECT SITE:	Tualatin, Oregon	**DATE AWARDED:**	March 20, 1968
FEDERAL GRANT:	$230,800	**TOTAL EST. PROJ. COST:**	$323,600
PROJECT NUMBER:	WPRD-27-01-67 11060 DLF	**PPBS NO.**	1106

DESCRIPTION OF PROJECT: A secondary and tertiary sewage treatment plant will be constructed for treatment of combined municipal and industrial wastes. The industrial waste is generated by the manufacture of dog food and will comprise 25% of the BOD load on the treatment plant. The plant will be operated and studied for a period of one year. The tertiary plant (consisting of flocculation, settling and filtration) will be operated with the addition of alum for phosphate removal during the critical 6 months of low stream flow. During the remainder of the year, the secondary effluent will receive plain filtration to maintain a very high quality effluent. The feasibility of alternate methods of chemical sludge disposal and the economics of tertiary treatment with phosphate removal will be studied.

FWPCA PROJECT OFFICER: Michael Kiado

INQUIRIES: ***Contact the*** Industrial Pollution Control Branch, DED
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
~~[illegible]~~
Washington, D. C. 20242

4/68

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INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, a(2) Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: City of Dallas, Oregon

TITLE OF PROJECT: Complete Aerobic Treatment of Combined Domestic and Industrial Wastes with Mechanical Aeration

PROJECT SITE: Dallas, Oregon

DATE AWARDED: Dec. 12, 1967

FEDERAL GRANT: $325,104

TOTAL EST. PROJ. COST: $463,472

PROJECT NUMBER: WPRD-29-01-67
11060 EZR

PPBS NO. 1106

DESCRIPTION OF PROJECT: Design and build a treatment plant to demonstrate the economics and efficiency of the completely aerobic treatment method when applied to the treatment of combined domestic and industrial wastes from a small municipality. The industrial waste is generated by fruit canning operations and by plywood glue manufacture and will comprise 75% of the BOD load on the treatment facility. The application of aerobic digestion, mechanical surface aeration, and earthen embankment construction will be demonstrated.

STATUS OF PROJECT: Work ongoing.

PROJECT DIRECTOR: Sidney S. Lasswell, CH_2M, Corvallis, Oregon.

INQUIRIES: Contact the Industrial Pollution Control Branch, DED
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
[illegible]
Washington, D. C. 20242

4/68

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, a(2) Federal Water Pollution Control Act(Clean Water Restoration Act).

GRANTEE: Green Bay Metropolitan Sewerage District
Green Bay, Wisconsin

TITLE OF PROJECT: "Combined Industrial and Municipal Waste Treatment"

PROJECT SITE: Green Bay, Wisconsin **DATE AWARDED:** December 1966

FEDERAL GRANT: $251,250 **TOTAL EST. PROJ. COST:** $335,000

PROJECT NUMBER: WPRD-60-01-67 **PPBS NO.** 1106
11060 EDX

DESCRIPTION OF PROJECT: The project will be a study, evaluation, and determination of the effectiveness, design, and operating parameters of four alternative biological treatment processes and modifications for treating combined municipal and industrial (primarily paper mill) waste waters. A pilot waste water treatment plant for each process will be operated in parallel. The effluent quality, operating parameters, design variables, and cost relationships for each process will be determined. Each pilot plant will have a 1 to 10 gpm capacity for combined waste waters. After selecting the most promising process, an existing 60 gpm pilot plant will be modified to suit the selected process and will be operated for a year to demonstrate its performance and to generate performance data. The final objective is to evaluate the design, performance, and use of the systems and to generalize the results for applicability to other locations.

INQUIRIES: *Contact the* Industrial Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
[redacted]
Washington, D. C. 20242

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6,* (a)(2) *Federal Water Pollution Control Act(Clean Water Restoration Act).

GRANTEE: Onondaga County, N.Y.

TITLE OF PROJECT: A Demonstration of Joint Municipal-Industrial Waste Treatment in the Onondaga Lake Watershed

PROJECT SITE: Onondaga County, N.Y.

DATE AWARDED: 8 September, 1967

FEDERAL GRANT: $357,150

TOTAL EST. PROJ. COST: $507,700

PROJECT NUMBER: WPRD-66
11060 FAE

PPBS NO. 1106

DESCRIPTION OF PROJECT:

Onondaga Lake has been a receptor of domestic and industrial wastes to such an extent that it is now in an advanced stage of eutrophication. This project is part of a twenty million dollar program to restore Onondaga Lake.

The objectives of this project are: (1) to demonstrate county-industry cooperative wastewater management of municipal-industrial wastes based on an entire watershed, (2) to demonstrate feasibility of treatment of mixtures of industrial and domestic wastes, (3) to demonstrate the treatment of an industrial waste stream with the waste effluent from another industry, (4) to evaluate the effects of proposed management and treatment methods on the economics of the treatment processes and on the restoration of the lake.

INQUIRIES: ***Contact the*** Industrial Pollution Control Branch, DED
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
[redacted]
Washington, D. C. 20242

8/68 GR

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, a(2) Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: City of South St. Paul, Minnesota

TITLE OF PROJECT: "Efficiency and Economy of Polymeric Sewage Clarification"

PROJECT SITE: South St. Paul, Minn. ***DATE AWARDED:*** June 15, 1967

FEDERAL GRANT: $450,000 ***TOTAL EST. PROJ. COST:*** $845,159

PROJECT NUMBER: WPRD 111-01-67
11060 EKK ***PPBS NO.*** 1106

DESCRIPTION OF PROJECT:

The Demonstration Project includes construction of (1) New Grit Chambers (4 units) two for industrial wastes, one for sanitary sewage and one for either industrial or sanitary wastes. These grit chambers will allow sewage to be treated individually or in combination of the two basic sewages in the treatment process following grit removal; (2) Mechanical flash mix-facilities, laboratory and utility building improvements and the necessary piping and other appurtenant construction. The City will also construct an interceptor sewer, sludge ejector and pumping station in conjunction with the demonstration project but is not a part of this demonstration grant request. The project objectives are to determine the increased purification attainable by treating industrial wastes (packing house), sanitary sewage, combined sanitary sewage, and stormwaters or combinations of such wastes with polyelectrolytes and floc "weighting agents."

INQUIRIES: ***Contact the*** Industrial Pollution Control Branch, DED
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
[redacted]
Washington, D. C. 20242

8/68

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6a(2) Federal Water Pollution Control Act(Clean Water Restoration Act).

GRANTEE: City of Hagerstown, Maryland

TITLE OF PROJECT: A Pretreatment Study on Combined Industrial-Municipal Waste Waters.

PROJECT SITE: Hagerstown Sewage Treatment Plant, Hagerstown, Maryland

DATE AWARDED: March 15, 1968

FEDERAL GRANT: Requested $320,890

TOTAL EST. PROJ. COST: $427,853

PROJECT NUMBER: WPRD 149-01-67 11060 EJD

PPBS NO. 1106

DESCRIPTION OF PROJECT: This project is to evaluate pre-treatment techniques for textile dyeing wastes. The dye wastes are reduced sulfur compounds with a high immediate and ultimate oxygen demand that cannot be satisfied in an activated sludge system. The pre-treatment technique is to provide initial oxidation by diffused aeration, chlorination, and the separate additions of sodium nitrate and potassium permanganate. Ammoniation will also be used. The project will be for two years and include a waste source investigation, detailed baseline analyses, construction of the pre-treatment facilities and full scale paralleling of the treatment system, and evaluation of the pre-treatment techniques.

INQUIRIES: ***Contact the*** Industrial Pollution Control Branch, DED
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior

Washington, D. C. 20242

HS 8/68

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, a(2) *Federal Water Pollution Control Act(Clean Water Restoration Act).*

GRANTEE: City of Grand Forks, North Dakota
P.O. Box 1518
Grand Forks, North Dakota

TITLE OF PROJECT: Controlled Treatment of Combined Potato Processing-Municipal Wastes by Anerobic Fermentation, Aerobic Stabilization Process

PROJECT SITE: Grand Forks, N.D. ***DATE AWARDED:*** JUL 17 1968

FEDERAL GRANT: $389,478 ***TOTAL EST. PROJ. COST:*** $796,904

PROJECT NUMBER: WPRD-206-01-R1
11060 DJB ***PPBS NO.*** 1106

DESCRIPTION OF PROJECT: A full scale 4.5 mgd demonstration and evaluation of the joint treatment of municipal sewage in conjunction with potato processing wastes using several pretreatment methods prior to final treatment in existing stabilizations ponds. The pretreatment methods include anerobic and aerated treatment, in series, anerobic treatment alone, and aeration alone, under varying seasonal waste load conditions.

In addition to determining the most efficient operation of the pretreatment methods, their effects on the conventional stabilization ponds will be extensively determined.

INQUIRIES: *Contact the* Industrial Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
[illegible]
Washington, D. C. 20242

8/68

HGK

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, a (2) *Federal Water Pollution Control Act(Clean Water Restoration Act).*

GRANTEE: City of Erie
Erie, Pennsylvania

TITLE OF PROJECT: "Joint Treatment of Domestic Sewage and Pulp and Paper Mill Industrial Wastes."

PROJECT SITE: Erie, Pa.

DATE AWARDED: JUN 20 1968

FEDERAL GRANT: $88,230

TOTAL EST. PROJ. COST: $333,674

PROJECT NUMBER WPRD-223-01-68
11060 EOC

PPBS NO. 1106

DESCRIPTION OF PROJECT:

This project is a 20 GPM pilot plant study to determine the feasibility of combining the treatment of normal domestic sewage and the weak wastes from a neutral sulfite semichemical pulp and paper mill.

One of the primary parameters of study will be the possible uptake of sewage neutrients by the treatment with equal volumes of the neutrient deficient pulping wastes. Full economic and design factors will be developed.

INQUIRIES: *Contact the* Industrial Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
~~[illegible] Indiana Ave. N.W.~~
Washington, D. C. 20242

GW:5/68

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, a(2) Federal Water Pollution Control Act(Clean Water Restoration Act).

GRANTEE: CITY OF JACKSONVILLE, ARKANSAS

TITLE OF PROJECT: "Demonstration of a Facility for the Biological Treatment of Complex Chlorophenolic Wastes.

PROJECT SITE: Jacksonville, Arkansas ***DATE AWARDED:*** May 17, 1968

FEDERAL GRANT: $153,569 ***TOTAL EST. PROJ. COST:*** $243,313

PROJECT NUMBER: WPRD 246-01 ***PPBS NO.*** 1106
11060 EGK

DESCRIPTION OF PROJECT:

A full scale (2-4 MGD) demonstration and evaluation of the joint treatment of industrial herbicide and municipal wastes, by the use of a municipal biological system composed of: primary clarification, bio-filters, aerated and stabilization ponds. The herbicides are of the chloro and chloro-oxyacetic acid deriviatives of phenol. Investigations will be conducted to determine how the concentration of the phenolics in a receiving stream can be reduced to a level below the tests and odor threshold, also to investigate the biological factors related to the removal of the herbicides during treatment. Suitable methods are to be developed for the identification of the various herbicide compounds. The adequacy of nutrient values in the joint waste to allow complete bio-processing of chlorophenolics and related compounds will also be demostrated

INQUIRIES: ***Contact the*** Industrial Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
[redacted]
Washington, D. C. 20242

8/68

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INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, (a2) ***Federal Water Pollution Control Act(Clean Water Restoration Act).***

GRANTEE: Harriman Utility Board
P. O. Box 434
Harriman, Tennessee 37748

TITLE OF PROJECT: "Treatment of Combined Sewage and Neutral Sulfite Semichemical (NSSC) Pulp and Paper Mill Wastes by High-Rate Biological Filtration and Extended Aeration."

PROJECT SITE: Harriman, Tennessee

DATE AWARDED: Jan. 17, 1969

FEDERAL GRANT: $238,905

TOTAL EST. PROJ. COST: $322,540

PROJECT NUMBER: 11060 DBF

PPBS NO. 1106

DESCRIPTION OF PROJECT:

Project Objectives: To investigate the significant factors affecting the treatment of combined municipal sewage and NSSC pulp and paper mill wastes by high rate biological filtration and extended aeration, separately or in combination, and to establish design criteria, operating parameters and treatment efficiencies.

Grant Duration: two (2) years

INQUIRIES: ***Contact the*** Industrial Pollution Control Branch, DAST
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
~~[illegible]~~
Washington, D. C. 20242

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INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6,* (a)(2) *Federal Water Pollution Control Act(Clean Water Restoration Act).

GRANTEE: Village of Walton
Village Hall
21 North Street
Walton, N.Y. 13856

TITLE OF PROJECT: "Dynamic Process Development for Biological Treatment of Whey Bearing Wastes"

PROJECT SITE: Walton, New York
Hastings on the Hudson, N.Y.

DATE AWARDED: Feb. 18, 1969

FEDERAL GRANT: $52,730

TOTAL EST. PROJ. COST: $80,047

PROJECT NUMBER: 11060 DUJ

PPBS NO. 1106

DESCRIPTION OF PROJECT:

Efforts of this one year bench and pilot study will be concentrated in resolving problems associated with biological treatment of wastes from the manufacture of cheese and associated dairy products. Frequency response techniques will be employed in the development of activated sludge systems with stable culture separation characteristics. Odor control techniques will be evaluated in packed tower trickling filter studies. A selected process will be employed in an on site pilot plant.

INQUIRIES: ***Contact the*** Industrial Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
Washington, D. C. 20242

2/69

HGK

INFORMATION SHEET

Feb. 5, 1969
Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Grant, under Section 6, (a 2), Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR: **(Name and Address)** The City of Macon
City Hall
Macon, Georgia 31201

PROJECT DIRECTOR: **(Name and Address)** Emory C. Matthews
Executive Secretary
Board of Water Commissioners
780 Third Street - Macon, Georgia 31201

TITLE OF PROJECT: "Pilot study of Treatment of Combined Municipal and Industrial Wastes in Selected primary and biological secondary facilities for the Reduction of Waste Materials Discharged to Receiving Streams."

PROJECT SITE: Macon, Georgia

PROGRAM (PROJECT) NUMBER: 11060 DPD

DATE OFFERED: Feb. 3, 1969

DATE ACCEPTED (AWARDED): Feb. 19, 1969

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: 2/19/69 Thru: 2/18/70	$ 171,845	$128,883.75

DESCRIPTION OF PROJECT:

Project Objectives: The objective of this study is to develop information relating to the joint treatment of municipal and industrial wastes. The industrial wastes will be selected wastes from both pulp and paper, and wood products companies. The study will be accomplished on a pilot plant basis.

Grant Duration: one year

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

GRW 6/19

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, (a)(2) *Federal Water Pollution Control Act(Clean Water Restoration Act).*

GRANTEE: City Council
City of Stockton
Stockton, California

TITLE OF PROJECT: "Upstream Packing House Waste Treatment Demonstration, City of Stockton"

PROJECT SITE: Stockton, California

DATE AWARDED: Feb. 25, 1969

FEDERAL GRANT: $381,078

TOTAL EST. PROJ. COST: $1,085,970

PROJECT NUMBER: 1106 -DRT

PPBS NO. 1106

DESCRIPTION OF PROJECT: A full scale (2 MGD) development and demonstration of upstream treatment of packinghouse waste by use of aerobic treatment in a combination use of high rate activated sludge and in-sewer treatment. The complex is anticipated to result in the reduction of BOD load to the municipal system of 80 percent and demonstrate the utility value of the conveying sewer line to further treat sewage and to reduce capitol expenditures over a typical activated sludge plant otherwise required. It is intended to consider the use of the Kehr process for partial upstream treatment during pilot studies.

INQUIRIES: *Contact the* Industrial Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
~~[illegible] Indiana Ave. N.W.~~
Washington, D. C. 20242

2/69

HGK

INFORMATION SHEET — —

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: Delaware River Basin Commission
25 Scotch Road - P.O. Box 360
Trenton, New Jersey 08603

TITLE OF PROJECT: Deepwater - Pilot Plant - Engineering and Interceptor Feasibility Study

PROJECT SITE: Salem County, N. J. *DATE AWARDED:* April 1, 1969

FEDERAL GRANT: $646,700 *TOTAL EST. PROJ. COST:* $995,650

PROJECT NUMBER: 11060 DR0 *PPBS NO.* 1106

DESCRIPTION OF PROJECT: A pilot plant and engineering study to develop a chemical-biological treatment process for joint industrial-municipal wastes, capable of attaining at least 88 to 93 percent removal of major pollutants. Design, operating and cost information is to be obtained for a 80 MGD regional treatment complex. To test and evaluate Advanced Waste Treatment processes for final effluent polishing. To develop suitable cost apportionment formulations for the treatment of various industrial wastes by a joint regional complex operated by an Interstate Agency. To develop and demonstrate the requirements for organizing, operating and administering a regional facility by an Interstate Agency.

INQUIRIES: *Contact the* Industrial Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
633 Indiana Ave. N.W.
Washington, D. C. 20242

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. **5, Research,** *Federal Water Pollution Control Act(Clean Water Restoration Act).*

GRANTEE: University of Waterloo
Dr. John J. Byerley

TITLE OF PROJECT: Detoxication of Cyanide Wastes by Electrooxidation

PROJECT SITE: Waterloo, Ontario

DATE AWARDED: November 26, 1968

FEDERAL GRANT: $12,429

TOTAL EST. PROJ. COST: $24,047

PROJECT NUMBER: WP-1343-01
1201 DOT

PPBS NO. 1201

DESCRIPTION OF PROJECT: The objective of this project is to develop an economical in-plant electrooxidation process for destroying cyanide ion in dilute cyanide wastes. This process is to be:

a) Capable of purifying large volumes of cyanide wastes by reducing cyanide ion concentration to less than 1 ppm.

b) Suited to operation by semi-skilled personnel in small scale operations.

c) Adaptable to continuous or semi-continuous operation.

INQUIRIES: *Contact the* Industrial Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
[redacted]
Washington, D. C. 20242

ELD/11/68

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 5, Research Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: University of Utah
Salt Lake City, Utah
Dr. Jan D. Miller

TITLE OF PROJECT: Depression of Pyrite in Sulfide Flotation Systems Without the use of Cyanide

PROJECT SITE: Salt Lake City, Utah

DATE AWARDED: January 29, 1969

FEDERAL GRANT: $12,663.00

TOTAL EST. PROJ. COST: $13,559.00

PROJECT NUMBER: 12010 DIM

PPBS NO. 1201

Date Effective: January 1, 1969

DESCRIPTION OF PROJECT:

The objective of this project is to develop a technique for the depression of pyrites in the froth flotation of sulfide ores by the addition of organic salts in place of commonly used cyanides. The oxidation potential of pure systems will be varied to determine explicitly the conditions which must be imposed to depress pyrites. Batch flotation tests on two natural sulfide ores containing pyrite will then be conducted to determine the feasibility of pyrite depression in a natural system under conditions prescribed for the pure system.

INQUIRIES: *Contact the* Industrial Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
[redacted]
Washington, D. C. 20242

RN 11/68

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act(Clean Water Restoration Act).

GRANTEE: The Mead Corporation
Chillicothe, Ohio

TITLE OF PROJECT: "Evaluation of Role of High Rate Trickling Filters and Aeration Devices Separately and in Combination for the Advanced Biological Treatment of Integrated Kraft Pulp and Paper Mill Effluents"

PROJECT SITE: Chillicothe, Ohio

DATE AWARDED: December, 1966

FEDERAL GRANT: $299,950 or 70% of project

TOTAL EST. PROJ. COST: $428,500

PROJECT NUMBER: WPRD 55-01-67
12040 EMY

PPBS NO. 1204

DESCRIPTION OF PROJECT: The pulp and paper industry needs to find an alternative treatment process which is less expensive and difficult-to-operate than the conventional activated sludge process. As a step in this direction, this project will involve the continuous operation of a pilot treatment plant containing plastic trickling filter, brush-aerated oxidation ditch, conventional aerated lagoon, deep aerated lagoons, and two clarifiers in combinations and evaluate possible efficiencies.

The specific research objectives are to: determine the effect of influent quality on biological treatment; evaluate potential of plastic trickling filters alone and in combination with brush-aerated oxidation ditch, conventional aerated lagoon and deep aerated lagoon; and to achieve higher-than-conventional BOD removals from kraft mill wastes.

INQUIRIES: ***Contact the*** Industrial Pollution Control Branch, DED
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
[redacted]
Washington, D. C. 20242

8/68

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: Pulp Manufacturers Research League, Appleton, Wisconsin

TITLE OF PROJECT: Development of Reverse Osmosis for In-Plant Treatment of Dilute Pulping Industry Wastes.

PROJECT SITE: 6 mills to be used

DATE AWARDED: ~~8-7-67~~ Sept 26 '67

FEDERAL GRANT: $483,371

TOTAL EST. PROJ. COST: $690,530

PROJECT NUMBER: WPRD 12-01-68
12040 EEL

PPBS NO. 1204

DESCRIPTION OF PROJECT:

The project will determine the ability of reverse osmosis technology to both produce a product water suitable for re-use in mill processes, and a concentrate available for by-product recovery or for treatment prior to discharge. Wastes to be handled, at separate mills, will include weak sulfite washings, weak Kraft washings, bleach wastes, condensates and semi-chemical wastes. The semi-trailer housed reverse osmosis equipment will be transported to separate mills for the experimental work. Presently projected mill sites are located in Wisconsin and Minnesota. Others are to be selected.

INQUIRIES: *Contact the* Industrial Pollution Control Branch, DED
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
~~[illegible]~~
Washington, D. C. 20242

8/68

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 5, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: Montana State University
Bozeman, Montana 59715

TITLE OF PROJECT: "Color and Mineral Removal from Kraft Bleach Wastes"

PROJECT SITE: Bozeman, Montana

DATE AWARDED: April 1, 1969

FEDERAL GRANT: $27,324

TOTAL EST. PROJ. COST: $32,791 (first) year

PROJECT NUMBER: 12040 DBD

PPBS NO. 1204

DESCRIPTION OF PROJECT:

BUDGET PERIOD: April 1, 1969 to March 31, 1970

The broad objective of this research is to determine the economic potential of synthetic resins for the control of pollution from kraft bleach wastes particularly in reuse and recycle systems.

More specifically, the objectives are (1) to explore the use of synthetic resins for the removal of color and other refractory organic contaminants, (2) to optimize the operation of fixed resin beds for the removal of organic contaminants and also for simultaneous demineralization of waste streams intended for reuse and recycle, (3) to seek economical regenerating methods and chemicals and innocuous means of waste regenerant disposal, (4) to compare the relative effectiveness and economy of resins with carbon and (5) to estimate the cost of waste water renovation, reuse, and recycle using resins either alone or in conjunction with other aids.

INQUIRIES: **Contact the** INDUSTRIAL POLLUTION CONTROL BRANCH, DAST
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
[redacted]
Washington, D. C. 20242

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 5, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: Oregon State University
Corvallis, Oregon 97331

TITLE OF PROJECT: "Slime Growth Evaluation of Treated Pulp Mill Wastes"

PROJECT SITE: Lebanon, Oregon	**DATE AWARDED:** March 12, 1969
FEDERAL GRANT: $12,910 (1st yr.)	**TOTAL EST. PROJ. COST:** $33,000
PROJECT NUMBER: 12040 DLQ	**PPBS NO.** 1204

DESCRIPTION OF PROJECT:

BUDGET PERIOD: March 1, 1969 to February 28, 1970

The main objective of this research is to evaluate the slime growth promoting potential of treated pulp mill wastes. Wastes treated by various means will be tested for their ability to support slime growth using various procedures. Additional studies will be carried out in an effort to define specific carbon and nitrogen sources in treated wastes which support the growth of *Sphaerotilus*. The effects of environmental factors on growth of *Sphaerotilus* also will be examined. This study will contribute to the development of abatement procedures for controlling slime growth as well as assist in establishing suitable water quality criteria for streams receiving pulp mill wastes. The study also will add to the knowledge of *Sphaerotilus*.

INQUIRIES: **Contact the** Industrial Pollution Control Branch, DAST
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
[redacted]
Washington, D. C. 20242

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 5, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: University of Washington
Seattle, Washington 98105

TITLE OF PROJECT: "Steam Stripping of Kraft Pulp Mill Effluent Streams"

PROJECT SITE: Seattle, Washington

DATE AWARDED: Feb. 6, 1968

FEDERAL GRANT: $43,665

TOTAL EST. PROJ. COST: $43,665

PROJECT NUMBER: WP-1305 12040 EXQ

PPBS NO. 1204

DESCRIPTION OF PROJECT: The broad objective of the presently proposed research is to improve the effectiveness and to extend knowledge concerning the possible industrial applications of the "SEKOR" process which, in essence, comprises the counter-current steam stripping of Kraft pulp mill condensate streams in order to bring about the removal of steam-volatile organic compounds from the fluid and thereby provide relatively clean effluent water which can be reused in pulp mill process or else discharged without danger. The volatilized organic substances are condensed to yield water-immiscible "SEKOR oils" which may find uses in commerce. Use of the process may also result in a substantial decrease in the odorous substances emitted into the atmosphere from Kraft pulp mills.

Major Investigator: Dr. Joseph L. McCarthy

INQUIRIES: **Contact the** Industrial Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
Washington, D. C. 20242

GRW 1/69

INFORMATION SHEET

June 2, 1969
Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Class I Grant, under Section 5 (Research), of the Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR: (Name and Address) University of Washington
Seattle, Washington 98105

PROJECT DIRECTOR: (Name and Address) Dr. G. G. Allan
Associate Professor Fiber Science
College of Forest Resources

TITLE OF PROJECT: "Pollution Abatement by Fiber Modification"

PROJECT SITE: Seattle, Washington

PROGRAM (PROJECT) NUMBER: 12040 EFC

DATE OFFERED: May 28, 1969

DATE ACCEPTED (AWARDED): June 10, 1969

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From:June 69 Thru:May 70 Terminal	$41,603	$37,850

DESCRIPTION OF PROJECT:

The broad aims of this research are:

1. to determine what species, size and shape of molecule can be attached to lignocellulosic fibers using simple reactions compatible with the established processes for the manufacture of fibrous products;
2. to investigate the effect of the attachment of such molecules on the physical properties of fibers and fiber composites, and
3. to use this information to assess the feasibility of reducing water pollution due to pulp liquor discharge by reattaching these waste chemicals to paper and wood fibers.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 5, Federal Water Pollution Control Act(Clean Water Restoration Act).

GRANTEE: University of Washington
Seattle, Washington
Dr. Joseph McCarthy

TITLE OF PROJECT: "Studies of Low Molecular Weight Lignin Sulfonates"

Effective Date: Sept. 1, 1968

PROJECT SITE: Seattle, Washington **DATE AWARDED:** Oct. 18, 1968

FEDERAL GRANT: $32,707.00 for 5th yr. **TOTAL EST. PROJ. COST:** $170,000.00

PROJECT NUMBER: WP00628-05
12040 DEH **PPBS NO.** 1204

DESCRIPTION OF PROJECT: The objective of this project is to isolate and characterize low molecular weight lignin sulfonates which are formed from the lignin in wood by the action of the sulfite pulping process. The information obtained should be of assistance in developing economic uses for the waste liquors from sulfite pulp mills.

INQUIRIES: ***Contact the*** Industrial Pollution Control Branch, DED
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior

Washington, D. C. 20242

GW/1-69

INFORMATION SHEET

5/29/69
Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Class I Grant, under Section 5R of the Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR: (Name and Address)
Oregon State University
Corvallis, Oregon 97331

PROJECT DIRECTOR: (Name and Address)
Mr. Fred J. Burgess
Head, Department of Civil Engineering
Oregon State University

TITLE OF PROJECT: "Pulp Mill Effluent Disposal"

PROJECT SITE: Corvallis and Newport, Oregon

PROGRAM (PROJECT) NUMBER: 12040 EBY

DATE OFFERED: MAY 27, 1969

DATE ACCEPTED (AWARDED): JUN 2 1969

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From:6/1/69 Thru:5/31/70	$ 20,781	$ 19,237

DESCRIPTION OF PROJECT:

Research will be conducted on predicting the effects of Kraft mill waste disposal in the ocean on the marine environment. A remote sensing system and aerial photography will be utilized to estimate waste concentrations, water currents, diffusion coefficients, and vertical concentration profiles in an ocean outfall plume. Aerial photography will be taken with a multispectral camera system of the waste field. Boat sampling will be conducted at the same time to provide "ground truth" data. Data will be compiled and analyzed by a system of computer analysis which was developed for this purpose in 1968-69.

The investigation will include several Kraft mill outfalls along the Oregon coast. Results of bioassays and chemical analyses will be related to photographic imagery. Zones of water quality influence about existing outfalls and proposed outfalls will be estimated, and diffusion coefficients will be estimated.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

INFORMATION SHEET --

RESEARCH & DEVELOPMENT CONTRACT

This sheet describes briefly an R&D Grant awarded under Sec. 6b, Federal Water Pollution Control Act (Clean Water Restoration Act).

CONTRACTOR Engineering-Science, Inc.
150 East Foothills Blvd.
Arcadia, California 91006

TITLE OF PROJECT: "Preliminary Investigation Requirements-Petrochemical & Refinery Waste Treatment Facilities"

PROJECT SITE: Austin, Texas

DATE AWARDED: June 30, 1969

FEDERAL CONTRACT:

TOTAL EST. PROJ. COST: $17,000

PROJECT NUMBER: 12020 EID

PPBS NO. 12020

DESCRIPTION OF PROJECT: This project is to compile, organize, and effectively present the many components which constitute a preliminary wastewater-treatability study. It will be formulated with the intent of serving as a valuable format and source of reference for personnel charged with conducting laboratory and pilot plant programs relative to wastewater treatability including identification of the gaps in the knowledge, and presentation of the descriptions in a form useful by the Water Resources Scientific Information Center. Particular emphasis will be placed on programs where petrochemical and refinery wastewaters are involved, although many aspects of the report will have a much broader applicability.

INQUIRIES: Contact the Industrial Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
[redacted]
Washington, D. C. 20242

WJL/4/69

INFORMATION SHEET - - -

RESEARCH & DEVELOPMENT CONTRACT

This sheet describes briefly an R & D Contract awarded under Sec. 6, Federal Water Pollution Control Act (Clean Water Restoration Act).

CONTRACTOR: C. W. Rice and Company
15 Noble Avenue
Pittsburgh, Pa. 15205

TITLE OF PROJECT: Cost-Effectiveness of Industrial Waste Water Treatment Practices

PROJECT SITE: above

DATE AWARDED: June 28, 1968

FEDERAL CONTRACT: $56,250

TOTAL PROJ. COST: $56,250

PROJECT NUMBER: 14-12-435

PPBS NO: 1202

BRANCH CHIEF:

PROJECT OFFICER:

DESCRIPTION OF PROJECT:

This contract is to obtain estimates of the total expenditures required by specific chemical industries during the next five years to meet (a) state water quality standards and (b) a high percentage removal of each specific pollutant including thermal pollution. The industries covered will include those in the Standard Industrial Categories 2813, 2814, 2815, 2818, and 2871 (Ammonia and Urea only).

The project is scheduled to be completed in October, 1968.

INQUIRIES: Contact the Industrial Pollution Control Branch, DED
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
[redacted]
Washington, D.C. 20242

ELD 8/68

INFORMATION SHEET

October 15, 1969
Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a ______________, under Section 6 ______________, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR: (Name and Address)
Mineral Pigments Corporation
Muirkirk, Maryland

PROJECT DIRECTOR: (Name and Address)
Dr. Harold E. Weisberg
Technical Director
Mineral Pigments Corp.
Muirkirk, MD

TITLE OF PROJECT: Ion-Exchange Effluent Treatment Unit (PET)

PROJECT SITE: Muirkirk, Maryland

PROGRAM (PROJECT) NUMBER: 12020 EBM

DATE OFFERED: October 3, 1969

DATE ACCEPTED (AWARDED): Oct. 30, 1969

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: 10/30/69 Thru: 10/29/70	$ 226,422	$115,967

DESCRIPTION OF PROJECT:

To develop and demonstrate the use of an ion-exchange process for recovery of chromate from chromate waste waters containing high concentrations (>1000 ppm) of chromate. The proposed process is one which is used for dilute chromate content cooling tower waters.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

INFORMATION SHEET

10/6/69
Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Class V, under Section 6(b), Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR: (Name and Address)
State of Alabama
Geological Survey and Oil & Gas Board
University, Alabama

PROJECT DIRECTOR: (Name and Address)
Doyle B. Knowles
Hydraulic Engineer
University, Alabama

TITLE OF PROJECT: "Treatment and Disposal of Complex Chemical Wastes"

PROJECT SITE: Tuscaloosa, Alabama

PROGRAM (PROJECT) NUMBER: 12020 EGC

DATE OFFERED: Sept. 24, 1969

DATE ACCEPTED (AWARDED): Oct. 20, 1969

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: 10/20/69 Thru: 4/19/72	$989,525	$314,525

DESCRIPTION OF PROJECT:

To develop and evaluate a surface or subsurface method for control of pollution from a complex chemical waste from a petrochemical complex, manufacturing alkyd resin and phenols. Also to develop methodology and/or testing techniques to permit projections of: (1) the fate of waste components, and (2) the waste assimulative capacity, of deep geological formations.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

INFORMATION SHEET

September 8, 1969
Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a ______________, under Section 6(b), Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR: (Name and Address) Armour Industrial Chemical Company
Chicago, Illinois 60611

PROJECT DIRECTOR: (Name and Address) E. F. Harp
Director Engineering
8201 West 47th Street
McCook, Ill 60525

TITLE OF PROJECT: Armour Industrial Chemical Company Secondary Wastewater Treatment

PROJECT SITE: McCook, Illinois

PROGRAM (PROJECT) NUMBER: 12020 EFW

DATE OFFERED: August 26, 1969

DATE ACCEPTED (AWARDED): Oct. 6, 1969

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: 4/25/69 Thru: 1/24/72	$503,000	$210,500

DESCRIPTION OF PROJECT:

The development and demonstration of a secondary treatment biological process to reduce the effluent, from a Fatty Acid Derivatives Chemical Plant, to less than 100 ppm of hexane soluble materials. Development work includes the evaluation of an existing pilot plant test unit, to be followed by a full scale (0.5MGD) demonstration at the Armour McCook, Illinois plant site. The treated effluent water quality improvement obtainable by use of a tertiary treatment process will also be explored on a pilot scale.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

INFORMATION SHEET

6/18/69
Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Grant, under Section 6(b), Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR: (Name and Address)
Farmers Chemical Association, Inc.
Box 87
Harrison, Tennessee

PROJECT DIRECTOR: (Name and Address)
Edward C. Bingham
Tech. Asst. to Gen. Mgr.
Farmers Chemical Association, Inc.
Harrison, Tennessee 37341

TITLE OF PROJECT: "Removal of Nitrogenous Compounds from a Fertilizer Plant Effluent Using Modified Operation of Conventional Waste Treatment Systems"

PROJECT SITE: Tyner, Tennessee

PROGRAM (PROJECT) NUMBER: 12020 EGM

DATE OFFERED: June 13, 1969

DATE ACCEPTED (AWARDED): June 27, 1969

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: 6/69 Thru: 6/71	$220,300	$154,210

DESCRIPTION OF PROJECT: A full scale development and demonstration of the treatment of nitrogenous fertilizer effluents using stripping or oxidation pretreatment techniques, followed by bio-nitrification in a conventional trickling filter sewage treatment plant as modified for the purpose of providing optimized removal of nitrogenous materials in the waste.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

GR 5/69

INFORMATION SHEET

June 17, 1969
Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Grant, under Section 6(b), Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR: (Name and Address)
The Dow Chemical Company
1000 Main Street
Midland, Michigan 48640

PROJECT DIRECTOR: (Name and Address)
Frank Brower
Director, Hydrocarbons and Monomers Laboratory
1000 Main Street
Midland, Michigan 48640

TITLE OF PROJECT: Demonstration of the Recondition and Reuse of Organically Contaminated Brines from Chemical Process Industries

PROJECT SITE: Midland, Michigan

PROGRAM (PROJECT) NUMBER:
12020 EAS

DATE OFFERED: June 16, 1969

DATE ACCEPTED (AWARDED): June 30, 1969

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: 6/30/69 Thru: 6/29/71	$1,300,408	$509,810

DESCRIPTION OF PROJECT:

Develop and demonstrate a chemical-adsorption process for wastewaters from a phenol manufacturing plant. The process will treat the wastewaters for the removal and recovery of phenol and acetate and the remaining brine wastewater will be utilized for caustic-chlorine production. The basic process involves the selective separation of organic constituents by activated carbon beds. Beds will be regenerated by chemical means.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

INFORMATION SHEET

June 19, 1969
Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Class V Grant, under Section 6(b) of the, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR:
(Name and Address)
E. I. du Pont de Nemours and Company
Pigments Department
Wilmington, Delaware 19898

PROJECT DIRECTOR:
(Name and Address)
Dr. Lloyd L. Falk
Senior Consultant
E. I. du Pont de Nemours and Company, Engineering Dept.
Wilmington, Delaware 19898

TITLE OF PROJECT: "Ocena Disposal of Industrial Wastes"

PROJECT SITE: Wilmington, Delaware

PROGRAM (PROJECT) NUMBER: 12020 EAW

DATE OFFERED: June 16, 1969

DATE ACCEPTED (AWARDED): June 24, 1969

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: July '69 Thru: April '70	$ 874,452	$ 150,116

DESCRIPTION OF PROJECT:

To evaluate the various technical and economic aspects of the dispersal of an acid-iron industrial waste at sea, over the continental shelf of the Atlantic off the coast of Delaware.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

GR/6/69

May 28, 1969
Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Grant, under Section 6(b), Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR: (Name and Address)
The Dow Chemical Company
Texas Division
Freeport, Texas

PROJECT DIRECTOR: (Name and Address)
Mr. W. F. McIlheny
Contract Research Dept.
The Dow Chemical Company
Freeport, Texas 77541

TITLE OF PROJECT: **"Treatment of Waste Waters Resulting from the Production of Polyhydric Organic Compounds"**

PROJECT SITE: **Freeport, Texas**

PROGRAM (PROJECT) NUMBER: **12020 EEQ**

DATE OFFERED: **May 23, 1969**

DATE ACCEPTED (AWARDED): June 5, 1969

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: 6/5/69 Thru: 6/4/71	$282,490	$197,740

DESCRIPTION OF PROJECT: **To develop a method of treatment of wastes from polyhydric manufacturing processes. Several alternative treatment methods will be examined to determine their technical, engineering, and economic feasibility. The results will be used to develop a conceptual design of a waste treatment facility for the briny wastes resulting from this chemical industry. Processes to be evaluated are aerobic biological systems, solvent extraction, foam fractionation, dialysis, and adsorption. Studies will include laboratory, bench scale, and pilot plant scale testing.**

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act(Clean Water Restoration Act).

GRANTEE: Department of Commerce and Industry
State of Louisiana

TITLE OF PROJECT: Evaluation of Polymeric Materials for the Treatment and Recovery of Petrochemical Wastes.

PROJECT SITE:	Baton Rouge, La.	**DATE AWARDED:**	April 16, 1969
FEDERAL GRANT:	$48,295	**TOTAL EST. PROJ. COST:**	$68,992
PROJECT NUMBER:	12020 - DQC	**PPBS NO.**	1202

DESCRIPTION OF PROJECT:

Evaluation, of recently developed reverse osmosis membranes for application to in-plant chemical waste streams, under laboratory and field conditions. Various selected membranes and petrochemical in-plant waste streams will be examined in a high velocity test circuit to obtain engineering and economic data, to provide guidelines for the application of reverse osmosis tc various selected in-plant waste streams to reduce net organic loads by recovering their product values.

INQUIRIES: ***Contact the*** Industrial Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior

Washington, D. C. 20242

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act(Clean Water Restoration Act).

GRANTEE: Union Carbide Corp.
R&D Department
Bound Brook, New Jersey 08805

TITLE OF PROJECT: Anaerobic Treatment of Synthetic Organic Wastes

PROJECT SITE South Charleston, W.Va. ***DATE AWARDED:*** December 11, 1968

FEDERAL GRANT: $220,400 ***TOTAL EST. PROJ. COST:*** $314,859

PROJECT NUMBER: 1202-DIS ***PPBS NO.*** 1202

DESCRIPTION OF PROJECT: To determine the technical and economic feasibility of an anaerobic-aerobic process for the treatment of composit organic chemical wastes from a complete petrochemical complex. Optimum results will be demonstrated on a 5000 gpd scale treatment facility to obtain design data and establish operating criteria for larger scale installations. The demonstration will be conducted subject to a technical an economic feasibility study based on laboratory scale research studies. The project will be for a two year period and will be initiated at the Union Carbide Technical Center at South Charleston, West Virginia.

INQUIRIES: ***Contact the*** Industrial Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
~~[illegible]~~
Washington, D. C. 20242

INFORMATION SHEET — —

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act(Clean Water Restoration Act).

GRANTEE: B. F. Goodrich Chemical Company
3135 Euclid Avenue
Cleveland, Ohio 44115

TITLE OF PROJECT: Waste Treatment Facilities for Poly Vinyl Chloride Manufacturing Plant

PROJECT SITE: Salem County, N. J. **DATE AWARDED:** JUL 2 1968

FEDERAL GRANT: $364,900 **TOTAL EST. PROJ. COST:** $823,100

PROJECT NUMBER: WPRD 248-01-68
12020 DJI **PPBS NO.** 1202

DESCRIPTION OF PROJECT: A development, demonstration, and evaluation project for the bio-chemical treatment of wastewaters from a typical poly vinyl chloride manufacturing plant, at a 0.85 mgd scale of operation.

The treatment system is to produce effluent to meet the receiving water standards (Delaware River) of greater than 85% removal of BOD, turbidity of not greater than 30 units above river water, and be free from taste and odor producing substances.

The process will consist of chemical pre-treatment with primary sedimentation, followed by activated sludge secondary treatment and a final polishing pond. Tertiary treatment studies with activated carbon are also contemplated to determine the extent to which the secondary effluent will lend itself to tertiary treatment, as future Delaware River standards may require the equivalent of tertiary treatment.

INQUIRIES: *Contact the* Industrial Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
633 Indiana Ave. N.W.
Washington, D. C. 20242

INFORMATION SHEET

Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Class V, under Section 6(b) of the, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR: (Name and Address)
Alabama Water Improvement Commission
State Office Building
Montgomery, Alabama 36104

PROJECT DIRECTOR: (Name and Address)
R.E. Lacey, Head, Membrane Processes Section
Southern Research Institute
Birmingham, Alabama 35205

TITLE OF PROJECT: Electromembrane Process for Regenerating Acid from Spent Pickle Liquor

PROJECT SITE: Birmingham, Alabama

PROGRAM (PROJECT) NUMBER: 12010 EQF

DATE OFFERED: August 14, 1969

DATE ACCEPTED (AWARDED): Sept. 9, 1969

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: One Year Thru:	$30,000	$ 20,000

DESCRIPTION OF PROJECT:

This project provides for the experimental investigation of an electromembrane process for the recovery of sulfuric acid and iron or iron oxide from spent sulfuric acid pickling liquors. The investigation will determine the technical feasibility of the process in a bench scale operation, provide engineering data for the design of larger recovery units, and develop engineering cost estimates to indicate the economic feasibility of the process. The bench scale studies will be directed at development of the configuration, mode, and conditions of operation required to minimize power requirements.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

ELD 8/69

INFORMATION SHEET

Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Class V Grant, under Section 6(b), Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR ~~CONTRACTOR~~: Weirton Steel Division
(Name and Address)
National Steel Corporation
Box 431
Weirton, West Virginia 26062

PROJECT DIRECTOR: William M. Smith
(Name and Address) Manager, Industrial Hygiene Engineering
Weirton Steel Division

TITLE OF PROJECT: Combined Steel Mill and Municipal Wastewaters Treatment

PROJECT SITE: Weirton, West Virginia

PROGRAM (PROJECT) NUMBER: 12010 DTQ

DATE OFFERED: July 14, 1969

DATE ACCEPTED (AWARDED): July 30, 1969

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: 7/30/69 Thru: 7/29/70	$ 163,963	$ 95,918

DESCRIPTION OF PROJECT:

This grant supports Phase I of grantee's anticipated three phase project to provide an overall waste treatment system to treat effluents from an integrated steel mill and the domestic wastes from the City of Weirton, West Va. The mill produces the full spectrum of steel industry wastes. Waste water volumes currently are 226 mgd and 1.2 mgd from the mill and the city respectively. The general approach will be to reduce volumes by providing treatment to maximize reuse, to provide pretreatment as required for subsequent combined treatment, to provide combined treatment of sanitary and specific mill wastes where a synergestic effect can be anticipated, in an expanded municipal facility, and to provide complete treatment of the remaining wastes.

Phase I consists of three tasks which include wastewater characterization and analysis of existing facilities, accessment of alternative treatment processes, and determination of the feasibility of a joint municipal-industrial waste treatment demonstration facility. Phase I will require twelve months to complete.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

ELD/6/69

INFORMATION SHEET

May 27, 1969
Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Class V Grant, under Section 6(b), Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR: (Name and Address)
American Iron & Steel Institute
150 East 42nd Street
New York, New York 10017

PROJECT DIRECTOR: (Name and Address)
John E. Barker
Manager, Pollution Control
Armco Steel Corporation
Middletown, Ohio 45042

TITLE OF PROJECT: "Biological Removal of Carbon and Nitrogen Compounds from Coke Plant Wastes"

PROJECT SITE: Houston, Texas

PROGRAM (PROJECT) NUMBER: 12010 EDY

DATE OFFERED: May 21, 1969

DATE ACCEPTED (AWARDED): June 25, 1969

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: 6/25/69 Thru: 9/24/70	$156,000	$109,200

DESCRIPTION OF PROJECT:

The Armco Steel Corporation, under the sponsorship of the AISI and with the assistance of the AISI Fellowship at Mellon Institute will design, construct, operate, optimize, and evaluate a 1 gpm pilot facility for the three stage biological treatment of raw ammoniacal liquors from the by-product coke plant of Armco Steel located at Houston, Texas. A typical analysis of this waste would indicate 1240 ppm of phenol, 60 ppm cyanide, and 6400 ppm ammonia. The three stage biological treatment system is designed to accomplish (a) oxidation of carbonaceous material (aerobic), (b) nitrification of nitrogenons compounds (aerobic) and (c) nitrate reduction to nitrogen gas (anaerobic). Laboratory testing indicates that removal of 75% of organic carbon, 99% of phenol and cyanide and essentially all of the ammonia can be expected. The pilot facility will provide the basis for the design of a full scale facility.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

ELD 5/69

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6 b, Federal Water Pollution Control Act(Clean Water Restoration Act).

GRANTEE: Minnesota Pollution Control Agency
717 Delaware Street, Southeast
Minneapolis, Minnesota 55440

TITLE OF PROJECT: "Study of Reverse Osmosis for Treating Metal Finishing Effluents"

PROJECT SITE: Minneapolis, Minnesota **DATE AWARDED:** June 30, 1969

FEDERAL GRANT: $49,737.00 **TOTAL EST. PROJ. COST:** $71,053.00

PROJECT NUMBER: 12010 DRH **PPBS NO.** 1201

DESCRIPTION OF PROJECT: The Minnesota Pollution Control Agency proposes to engage the North Star Research and Development Institute (3100 Thirty Eighth Ave., So., Minneapolis, Minnesota, 55406) to conduct Phase I of an anticipated three phase - three year project. The objectives of the project are to develop reverse osmosis (RO) for the treatment of metal finishing effluents (MFE) for the purposes of (a) eliminating pollutants from effluents, (b) recovery of valuable plating materials, and (c) recovery of waste waters for reuse.

Phase I will provide for screening of candidate membranes for effectiveness and compatibility in single ion applications, compatibility of support materials, investigation of promising membranes for improvement by modification, and investigation of operating parameters, e.g. temperature, pressure, thickness, strength, and permeability.

Phase II would extend the studies to mixed ion MFE's, life studies, and production aspects and costs of membranes.

Phase III would consist of scale-up studies on simulated MFE's and subsequently to actual MFE's with generation of data for commercialization.

INQUIRIES: *Contact the* Industrial Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
633 Indiana Ave. N.W.
Washington, D. C. 20242

ELD 4/68

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6(b) Federal Water Pollution Control Act(Clean Water Restoration Act).

GRANTEE: CF&I Steel Corporation
P. O. Box 1920
Denver, Colorado 80201

TITLE OF PROJECT: Research Study of Coal Preparation Plant and By Product Coke Plant Effluents

PROJECT SITE: Pueblo, Colorado

DATE AWARDED: MAR 2 7 1969

FEDERAL GRANT: $86,500.00

TOTAL EST. PROJ. COST: $205,000.00

PROJECT NUMBER: 12010 DNF

PPBS NO. 1201

DESCRIPTION OF PROJECT:

This project will provide for (a) a study of waste sources, volumnes, and characteristics, (b) laboratory and bench scale studies of alternate treatment processes, and (c) a study of additions to planned coal washery filtration facilities to develop reuse possibilities of non-coking solids and solids waste disposal. Development of methods for waste water treatment to produce effluents suitable for reuse or discharge in accordance with state stream standards will be a major objective.

The project period is seven months.

INQUIRIES: ***Contact the*** Industrial Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
[redacted]
Washington, D. C. 20242

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6 (b), Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: Interlake Steel Corporation
310 South Michigan Avenue
Chicago, Illinois 60604

TITLE OF PROJECT: Pollution Control of Blast Furnace Gas Washer Through Recirculation

PROJECT SITE: Chicago, Illinois

DATE AWARDED: January 27, 1969

FEDERAL GRANT: $175,200.

TOTAL EST. PROJ. COST: $525,600.

PROJECT NUMBER: WPRD 208-01-68
12010 DRE

PPBS NO. 1201

DESCRIPTION OF PROJECT: The full scale demonstration project will provide additional facilities for the treatment and reuse of 7.2 mgd of blast furnace gas washer water from the venturies and coolers on two blast furnaces. The water before treatment contains 700 ppm of suspended solids, 1630 ppm of total solids, 3ppm cyanides, and 100 ppb of phenols. An anionic polyelectrolyte will be used to improve recovery of magnetite (Fe3^{O4}) and removal of cyanides in the primary clarifier. In addition, polyphosphates and chlorine will be used as required to prevent a hydrogen cyanide hazard in the vacinity of the cooling tower. A new cooling tower will reduce the water temperature and further reduce cyanides thus permitting reuse of most of the water. The cooling tower blowdown will be used to cool slag. The blowdown stream will be evaporated and leave its dissolved solids on the slag pile. The blowdown rate will be determined by the allowable alkalinity of the recirculated water. The water is passed through cooling coils in the walls of the blast furnaces before routing through the venturies. This is expected to limit the alkalinity to 500 ppm.

The project period of 18 months is based on anticipated completion of construction in July 1969 and Final Report by August 1, 1970.

INQUIRIES: *Contact the* Industrial Pollution Control Branch, DED
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
~~633 Indiana Ave. NW~~.
Washington, D. C. 20242

FLD 11/68

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6(b), Federal Water Pollution Control Act(Clean Water Restoration Act).

GRANTEE: RAI Research Corp.
36-40 37th Street
Long Island City, N.Y. 11101

TITLE OF PROJECT: "Treatment of Cyanide Rinse Waters by Electrodialysis"

PROJECT SITE: Long Island City, N.Y **DATE AWARDED:** Nov. 11, 1968

FEDERAL GRANT: $58,685 **TOTAL EST. PROJ. COST:** $83,835

PROJECT NUMBER: WPRD-270-01-68 **PPBS NO.** 1201
12010 DFS **PROJECT PERIOD:** Nov. 11, 1968-Jul. 11, 1969

DESCRIPTION OF PROJECT: This project provides for a laboratory study of the application of electrodialysis to the treatment of a cyanide solution which simulates the rinse water from a copper "strike" electroplating operation. The objective is to develop design parameters and to define economic factors as a basis for a later demonstration program with an industrial plating firm. The project period will be eight months.

INQUIRIES: *Contact the* Industrial Pollution Control Branch, DED
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
~~633 Indiana Ave. N.W.~~
Washington, D. C. 20242

ELD/6-68

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6(b), Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: The Beaton and Corbin Mfg. Co.
Southington, Connecticut

TITLE OF PROJECT: Chemical Treatment of Plating Waste for Elimination of Chromium, Nickel and Metal Ions

PROJECT SITE: Southington, Conn.

DATE AWARDED: June 3, 1968

FEDERAL GRANT: $37,250

TOTAL EST. PROJ. COST: $58,220

PROJECT NUMBER: WPRD 244-01-68
12010 DMF

PPBS NO. 1201

DESCRIPTION OF PROJECT: This is an industrial waste treatment project for the installation and demonstration of a chemical pre-rinse system for the removal of toxic materials from the wastes from a small electroplating plant. The treated effluent is expected to have a pH of 6.5 to 8.5 and will contain less than: 0.1 ppm of chromium, copper, nickel, or zinc; 100 ppm of chlorides or nitrates; 200 ppm of sulfates; 5 ppm of BOD; and will be color and odor free. Approximately two-thirds of the treated effluent will be reused for plating rinse water.

Precipitates of toxic metal ions will be produced by the chemical treatment of the segregated waste streams from the various plating lines. Sludges containing these precipitates will be routed to sludge drying beds. Dried sludges will be disposed of by landfill.

There are over three thousand similar sources of stream pollution in the New England area alone and over twelve thousand plating plants across the nation. This project will provide technical and economic data on an effective waste treatment method. It is anticipated that this information will be of value to many firms, who because of insufficient funds, could not themselves undertake the engineering and development costs required.

PROJECT PERIOD: June 3, 1968 to February 3, 1970

INQUIRIES: *Contact the* Industrial Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
[redacted]
Washington, D. C. 20242

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6 (b) ***Federal Water Pollution Control Act(Clean Water Restoration Act).***

GRANTEE: Volco Brass and Copper Company
Kenilworth, New Jersey 07033

TITLE OF PROJECT: "Treatment Recovery, and Reuse of Copper Wire Mill Pickling Wastes."

PROJECT SITE: Kenilworth, N. J.

DATE AWARDED: June 28, 1968

FEDERAL GRANT: $124,000

TOTAL EST. PROJ. COST: $177,159

PROJECT NUMBER: WPRD 237-01-68
12010 DPF

PPBS NO. 1201

PROJECT PERIOD: June 28, 1968 to July 10, 1969

DESCRIPTION OF PROJECT: Volco Brass and Copper Company produces 75 TPD of copper and copper alloy wire. Wastes from the pickling, bright dipping, and drawing operations consist of spent treating solution dumps, drag-out, and rise waters containing acids; alkalies; and hexavalent chromium, copper, fluoride, and copper complexing ammonium ions. Lancy Laboratories has designed a process and waste treatment system which will recover the copper electrolytically, will regenerate the treating solutions, and will permit reuse of 95+% of the waste water as process water. The process is free of any significant sludge disposal problem. The project is to be completed in one year.

INQUIRIES: ***Contact the*** Industrial Pollution Control Branch, DED
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
~~[illegible]~~.
Washington, D. C. 20242

ELD 5/68

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6 (b), Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: **S. K. Williams Company**
2370 N 32nd Street
Milwaukee, Wisconsin 53210

TITLE OF PROJECT: **"Electroplating Waste Treatment and Water Reuse"**

PROJECT SITE: **Milwaukee, Wisconsin**

DATE AWARDED: July 17, 1968

FEDERAL GRANT: **$87,750**

TOTAL EST. PROJ. COST: **$157,306.80**

PROJECT NUMBER: **WPRD222-01-R1-68**
12010 DSA

PPBS NO. 1201

PROJECT PERIOD: Jul. 17, 1968 to Mar. 17, 1970.

DESCRIPTION OF PROJECT: **The S. K. Williams Company proposes to install a chemical pre-rinse type waste treatment plant (designed by Lancy Laboratories) to treat the drag-out from various operations in their new job-plating plant. Each section of the waste treatment facility will be expected to alternately or simultaneously treat the wastes from three to seven different processing operations. Sludges will be disposed of by landfill and 80-90% of the rinse waters will be reused. The blowdown rinse waters will be free of significant quantities of toxic substances.**

The project period will be 8 months for construction and 12 months for operation, maintenance, and post construction studies and reports.

INQUIRIES: *Contact the* **Industrial Pollution Control Branch, DED**
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
~~[illegible]~~
Washington, D. C. 20242

ELD/6-68

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6 (b), Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: Metal Finishers' Foundation
Upper Montclair, New Jersey

TITLE OF PROJECT: "An Investigation of Techniques for the Removal of Chromium and Cyanides from Electroplating Wastes."

PROJECT SITE: Upper Montclair, N.J.
DATE AWARDED March 27, 1968

FEDERAL GRANT: $98,000
TOTAL EST. PROJ. COST: $145,000

PROJECT NUMBER: WPRD 201-01-68
12010 EIE
PPBS NO. 1201
DURATION: 2 years

PROJECT PERIOD: March 1, 1968 to April 30, 1970

DESCRIPTION OF PROJECT:

The Metal Finishers' Foundation will conduct a two-phase research and demonstration project on methods for economically treating cyanide and chromium wastes from small plating shops. Phase I will include (a) a "State of the Art" review of recovery techniques, (b) accumulation of data on waste stream compositions, (c) selection of techniques for bench scale study and selection of extractants and complexing agents, (d) bench scale experimental investigation of selected techniques and (e) evaluation of the test results and preparation of recommendations. This phase will require one year.

Phase II will consist of (a) the design of theprocess and the processing equipment, (b) acquisition and installation of the equipment in an electroplating plant, (c) operation of the demonstration plant to accumulate data, and (d) the evaluation of the data and preparation of reports.

The work will be performed by subcontract to the Battelle Memorial Institute at Columbus, Ohio. Various treatment methods; including liquid-liquid extraction, ion flotation, and precipitate flotation; will be investigated and compared.

INQUIRIES: *Contact the* Industrial Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
~~633 Indiana Ave. N.W.~~
Washington, D. C. 20242

BLD:2/68

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6(b) Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: Armco Steel Corporation
Middletown, Ohio

TITLE OF PROJECT: Treatment of Waste Water - Waste Oil Mixtures

PROJECT SITE: Ashland, Kentucky

DATE AWARDED: May 16, 1968

FEDERAL GRANT: $209,000

TOTAL EST. PROJ. COST: $1,541,720

PROJECT NUMBER: WPRD 169-01-68
12010 EZV

PPBS NO. 1201

PROJECT PERIOD: Nov. 1, 1967 to Oct. 31,1969

DESCRIPTION OF PROJECT:

This project provides for design, operation, studies, and reports on a full scale demonstration facility to be built by Armco for the treatment of 4.6 mgd of oil-water emulsion wastes from a five-stand cold-rolling mill. A five chemical treatment method of coagulation, flocculation, dissolved air flotation for oil-water separation, and sludge incineration will be used. The project schedule provides one year for construction and one year for operating studies of parameters and reporting of results.

INQUIRIES: *Contact the* Industrial Pollution Control Branch, DED
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
~~[illegible]~~
Washington, D. C. 20242

ELD/Feb 68

INFORMATION SHEET--

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6b, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: Armco Steel Corporation
Middletown, Ohio

TITLE OF PROJECT: "Treatment of Acid Rinse Waters"

PROJECT SITE: Middletown, Ohio

DATE AWARDED: May 16, 1968

FEDERAL GRANT: $547,500

TOTAL EST. PROJ. COST: $1,784,800

PROJECT NUMBER: WPRD 168-01-68
12010 DUL

PPBS NO. 1201

PROJECT PERIOD: Nov. 1, 1967 to Oct. 31, 1969

DESCRIPTION OF PROJECT:

The project provides for construction, operation, tests, and reports on facilities to treat 1500 gpm of acid rinse waters produced by the hydrochloric acid pickling of strip-steel preparatory to cold-rolling. The treatment process will consist of limestone neutralization, aeration, coagulation, sedimentation, sludge recirculation, vacuum filtration of the excess sludge, and effluent equalization.

All or nearly all of the acid and the compounds of iron will be removed by the treatment process. The chloride content of the waste is not changed by this process and may be such that dilution with other available wastes will be required in order to meet the state's proposed standards regarding total dissolved solids.

INQUIRIES: *Contact the* Industrial Pollution Control Branch, DED
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
~~633 Indiana Ave. N.W.~~
Washington, D. C. 20242

ED/Feb.'68

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6(b) Federal Water Pollution Control Act(Clean Water Restoration Act).

GRANTEE: Chemical Separations Corporation
Bus Terminal Road
Oak Ridge, Tennessee 37830

TITLE OF PROJECT: Acid Pickle Liquor Wastes Treatment Utilizing Advanced Ion Exchange Techniques

PROJECT SITE: Oak Ridge, Tennessee **DATE AWARDED:** December 20, 1967

FEDERAL GRANT: $50,400.00 **TOTAL EST. PROJ. COST:** $72,000.00

PROJECT NUMBER: WPRD 41(R1)-01-68 **PPBS NO.** 1201

DESCRIPTION OF PROJECT:
The purpose of this grant is to determine the feasibility of using continuous ion exchange to strip Fe from pickling wastes and regenerate the acid for reuse. The iron will be converted to a high grade Fe_2O_3 for use in metallurgical processing as by-product.

Project Period: 15 months

INQUIRIES: ***Contact the*** Industrial Pollution Control Branch, DED
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
~~[illegible] Indiana Ave. NW~~
Washington, D. C. 20242

ELD 8/68

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 5, (Research) *Federal Water Pollution Control Act(Clean Water Restoration Act).*

GRANTEE: Clarkson College of Technology
Potsdam, New York 13676
Dr. H.H.G. Jellinek

TITLE OF PROJECT: Metal Removal/Recovery from Polluted Water by Complexation with Linear Polyelectrolytes

PROJECT SITE: Potsdam, New York

DATE AWARDED: February 13, 1969

FEDERAL GRANT: $24,328.00

TOTAL EST. PROJ. COST: $27,645.00

PROJECT NUMBER: 12010 DHP

PPBS NO. 1201

DESCRIPTION OF PROJECT:

Project Period: March 1, 1969-Feb. 28,197

The complexation of metal ions with polyacids to form water soluble complexes and subsequent precipitation with polybases will be investigated. Metals are to be recovered by destroying the complex at low pH. Reuse of the polyelectrolyte will be investigated. The objective of the project will be to demonstrate that the above described technique is an economically and technically feasible method of treating wastewaters containing widely varying metal concentrations.

This grant is for the first year of grantee's anticipated three year project.

INQUIRIES: *Contact the* Industrial Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
[redacted]
Washington, D. C. 20242

ELD/12/68

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: Crown Zellerbach Corp., Camas, Washington.

TITLE OF PROJECT: Economic Optimization of Secondary Treatment and Determination of Load to Control Biological Growths in a Stream.

PROJECT SITE: Lebanon, Oregon

DATE AWARDED: 12-5-67 (O&A)

FEDERAL GRANT: $503,739

TOTAL EST. PROJ. COST: $802,000

PROJECT NUMBER: WPRD 69-01-68
12040 ELW

PPBS NO. 1204

DESCRIPTION OF PROJECT:

This project will seek to determine the costs of mechanically aerated lagoon treatment of pulp mill and paper mill wastes by examining in detail the comparison of retention time, aerated logoon depth, basin configuration, recycle and parallel versus series operation of two lagoons. Information will also be obtained concerning treatment achieved by multiple lower hp surface aerators compared to two high hp units. Further, the project will, by use of test streams, seek to determine the degree of treatment needed to prevent slime growth in the receiving stream.

INQUIRIES: *Contact the* Industrial Pollution Control Branch, DED
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
[redacted]*W.*
Washington, D. C. 20242

8/68

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: N. Carolina State University, Raleigh, N. C.

TITLE OF PROJECT: Filtration of Kraft Pulp Liquor through Chips

PROJECT SITE:	Raleigh, N. C.	**DATE AWARDED:**	8-4-67 (O&A)
FEDERAL GRANT:	$18,144	**TOTAL EST. PROJ. COST:**	$25,920
PROJECT NUMBER:	WPRD 115-01-68 12040 EZZ	**PPBS NO.**	1204

DESCRIPTION OF PROJECT:

The project is directed toward a determination of the decrease in pollutional load that may be gained by filtration of weak Kraft washings through wood chips just prior to their entry into the pulping process.

INQUIRIES: *Contact the*
Industrial Pollution Control Branch, DED
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
[redacted]
Washington, D. C. 20242

8/68

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act(Clean Water Restoration Act).

GRANTEE: Georgia-Kraft Co., Rome, Ga.

TITLE OF PROJECT: Treatment of Selected Internal Kraft Mill Wastes in Cooling Tower

PROJECT SITE: Macon, Georgia	***DATE AWARDED:*** 8-7-67 (O&A)
FEDERAL GRANT: $287,000	***TOTAL EST. PROJ. COST:*** $411,000
PROJECT NUMBER: WPRD 116-01-68 12040 EEK	***PPBS NO.*** 1204

DESCRIPTION OF PROJECT:

This project will determine the ability of cooling towers to both permit heat dissipation and recycle of waste water back to the condensers as well as the treatment efficiency that may be provided by passage of waste waters through the tower. Condensates and decker filtrate will be handled by this facility. Organic load reduction will probably be gained by a combination of chemical oxidation, air stripping of volatile constituents and biochemical oxidation.

INQUIRIES: ***Contact the*** Industrial Pollution Control Branch, DED
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
[redacted]
Washington, D. C. 20242

8/68

INFORMATION SHEET--

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: Georgia-Kraft Co., Rome, Ga.

TITLE OF PROJECT: Treatment of Kraft Mill Effluent by Foam Separation

PROJECT SITE: Rome, Ga.

DATE AWARDED: 8-4-67 (O&A)

FEDERAL GRANT: $48,181

TOTAL EST. PROJ. COST: $68,830

PROJECT NUMBER: WPRD 117-01-68
12040 EUG

PPBS NO. 1204

DESCRIPTION OF PROJECT:

The project is directed toward an examination of the possible separation, in the foam phase, of a significant portion of the dissolved organics contained in primary treated Kraft Mill waste. Hopefully it may be discovered that a high percent of the pollutional load may be separated in a relatively small volume by these means. This may then provide a larger volume of 'bottoms' suitable for discharge and a smaller volume of 'tops', or collapsed foam, directed to complete treatment.

INQUIRIES: *Contact the* Industrial Pollution Control Branch, DED
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
~~[illegible]~~
Washington, D. C. 20242

8/68

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6(b) Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: International Paper Company
220 East 42nd Street
New York, New York 10017

TITLE OF PROJECT: "Evaluation and Demonstration of the Massive Lime Process for the Removal of Color from Kraft Pulp Mill Wastes."

PROJECT SITE: Springhill, Louisana ***DATE AWARDED:*** JUN 14 1968

FEDERAL GRANT: $595,000 ***TOTAL EST. PROJ. COST:*** $850,000

PROJECT NUMBER: WPRD-135-01-(R-1)-68 ***PPBS NO.*** 1204
12040 DYD

DESCRIPTION OF PROJECT:

International Paper Company proposes to isolate wastes from the caustic extraction stage of a Kraft pulp bleaching line and the unbleached decker of the pulp mill, and to treat these wastes separately and combined for the removal of color and reduction of biochemical oxygen demand by the Massive Lime Process over a period of 27 months.

INQUIRIES: ***Contact the*** Industrial Pollution Control Branch, DBD
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
[illegible]
Washington, D. C. 20242

GRW/5-68

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6(b) Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: Crown Zellerbach Corporation
1 Bush Street
San Francisco, California 94119

TITLE OF PROJECT: "A Demonstration Plant Evaluation of Four Methods for Pulp and Paper Mill Sludge Utilization and Disposal"

PROJECT SITE: Camas, Washington

DATE AWARDED: April 3, 1968

FEDERAL GRANT: $350,000

TOTAL EST. PROJ. COST: $848,320

PROJECT NUMBER: WPRD 144-01-68
12040 ESV

PPBS NO. 1204

DESCRIPTION OF PROJECT:

This demonstration study is a full-scale investigation of four methods of utilization and disposal of primary sludge from a combined pulp and paper mill. The areas of investigation are: disposal by incineration, utilization as "hog-fuel" make-up in a conventional steam boiler at rates ranging between 5 and 50%, use as a dried mulching material for highway slope preparation and the evaluation of sludge as an agricultural soil conditioner.

INQUIRIES: *Contact the* Industrial Pollution Control Branch, DED
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
[redacted]
Washington, D. C. 20242

8/68

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6(b) Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: Interstate Paper Corporation
300 East 42nd Street
New York, New York 10017

TITLE OF PROJECT: "Chemical Coagulation Color Removal System for Kraft Mill Effluents"

PROJECT SITE: Riceboro, Georgia

DATE AWARDED: June 27, 1968

FEDERAL GRANT: $466,895

TOTAL EST. PROJ. COST: $741,160

PROJECT NUMBER: WPRD-183-01-68
12040 ENC

PPBS NO. 1204

DESCRIPTION OF PROJECT: This project proposes to develop, install, and demonstrate a new chemical coagulation process for removing color from kraft pulp and paper mill effluents. The process uses a stoichiometric lime addition to the untreated wastes, prior to primary sedimentation, which adsorbs the color bodies onto the lime floc and is settled with the sludge. This sludge is then removed to lagoons for drying and storage.

INQUIRIES: ***Contact the*** Industrial Pollution Control Branch, DED
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
[redacted].
Washington, D. C. 20242

GRW:5/68

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6(b) Federal Water Pollution Control Act(Clean Water Restoration Act).

GRANTEE: Continental Can Company, Inc.
Paperboard and Kraft Paper Division
Hodge, Louisiana 71247

TITLE OF PROJECT: "A Color Removal and Fibrous Sludge Disposal Process for the Kraft Paper Industry"

PROJECT SITE: Hodge, Louisiana

DATE AWARDED: JUL 2 5 1968

FEDERAL GRANT: $750,000.00

TOTAL EST. PROJ. COST: $2,865,970

PROJECT NUMBER: WPRD-240-01-68
12040 DRY

PPBS NO. 1204

DESCRIPTION OF PROJECT: The two year project will develop economical design and operational data applicable to the Kraft pulp and paper industry in removal of color in mill effluents, and disposing of fibrous sludges. Color removal will be accomplished by lime precipitation of the color bodies and fibers, with subsequent regeneration of the lime by sludge combustion in a kiln.

INQUIRIES: *Contact the* Industrial Pollution Control Branch, DED
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
[redacted].
Washington, D. C. 20242

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6(b) Federal Water Pollution Control Act(Clean Water Restoration Act).

GRANTEE: Institute of Paper Chemistry
Appleton, Wisconsin 54911

TITLE OF PROJECT: "Chemical and Physical Nature of Color Bodies in Kraft Mill Effluents Before and After Treatment"

PROJECT SITE: Appleton, Wisconsin	**DATE AWARDED:** DEC 31 1968
FEDERAL GRANT: $119,504.70	**TOTAL EST. PROJ. COST:** $170,721
PROJECT NUMBER: 12040DKD	**PPBS NO.** 1204

DESCRIPTION OF PROJECT:

Kraft pulping wastes which are discharged into streams may darken the color of the water, contribute to the biochemical oxygen demand and increase the solids content of the stream. New federal and state water standards will require removal of such materials from mill effluents. Lime precipitation in small scale operations has been shown to remove certain of the solid constituents and demonstration grants on lime treatments have been approved at three kraft mill sites.

The objective of the proposed project is to determine the chemical and physical nature of the color bodies in the effluents from these three kraft mills both before and after lime treatment. The investigation should lead to a better understanding of the results of the lime treatments, and may suggest means for more complete removal of color.

INQUIRIES: **Contact the** Industrial Pollution Control Branch - DED
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
[redacted]
Washington. D. C. 20242

INFORMATION SHEET

June 19, 1969
Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Class V Grant, under Section Six of the, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR: St. Regis Paper Company
(Name and Address)
150 East 42nd Street
New York, New York 10017

PROJECT DIRECTOR: Mr. Roy L. Miller
(Name and Address)
Post Office Box 1591
Pensacola, Florida 32502

TITLE OF PROJECT: "The Production and Use of Activated Carbon for Water Renovation in Kraft Pulp and Paper Mills"

PROJECT SITE: Jacksonville and Pensacola, Florida; and West Nyack, New York

PROGRAM (PROJECT) NUMBER: 12040 EJU

DATE OFFERED: JUN 13 1969

DATE ACCEPTED (AWARDED): JUN 25 1969

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: 6-30-69 Thru: 6-30-72	$1,461,562	$878,472

DESCRIPTION OF PROJECT:

St. Regis Paper Company proposes a program for the development of an economical system for maximum water reuse in the kraft pulp and paper industry as a means of water pollution control and conservation. This program is based on two concepts. The first is an effluent treatment cycle using activated carbon and the second is on-site carbon production and activation from readily available raw materials with full integration into the kraft mill recovery and power systems to achieve the lowest net cost of activated carbon.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

INFORMATION SHEET --

RESEARCH & DEVELOPMENT ~~GRANT~~ CONTRACT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Contract *Federal Water Pollution Control Act (Clean Water Restoration Act).*

GRANTEE: Electro-Optical Systems, Inc.
300 North Halstead St.
Pasadena, California 91107

TITLE OF PROJECT: "Plasma Arc Processing of Spent Sulfite Liquors"

PROJECT SITE: Pasadena, California

DATE AWARDED: May 16, 1968

FEDERAL GRANT: $49,945.00

TOTAL EST. PROJ. COST: $49,945.00

PROJECT NUMBER: 14-12-162

PPBS NO. 1204

DESCRIPTION OF PROJECT: To determine the technical and economic feasibility of plasma arc treatment of sulfite waste liquors.

INQUIRIES: *Contact the* Industrial Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
Washington, D. C. 20242

GRW 1/69

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 5, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: Texas A&M Research Foundation

TITLE OF PROJECT: "Metal Ion-Catalyzed Oxidation of Phenols and Aromatic Amines"

PROJECT SITE: Texas A&M

DATE AWARDED: October 14, ~~[illegible]~~ 1968

FEDERAL GRANT: $40,265

TOTAL EST. PROJ. COST: $234,000

PROJECT NUMBER: WP 01179-03
12050 DIT

PPBS NO. 1205

DESCRIPTION OF PROJECT: A Study of the mechanism and feasibility of metal ion-catalyzed oxidation of phenols and aromatic amines by molecular oxygen in wastewater systems partially treated with potassium permanganate.

INQUIRIES: Contact the Industrial Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
~~[illegible]~~
Washington, D. C. 20242

INFORMATION SHEET

Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Class I Grant, under Section 5 of the Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR: (Name and Address) University of Oklahoma Research Institute
1808 Newton Drive
Norman, Oklahoma 73069

PROJECT DIRECTOR: (Name and Address) Prof. George Reid

TITLE OF PROJECT: State-of-the-Art Evaluation on Petroleum and Coal Wastes

PROJECT SITE: Norman, Oklahoma

PROGRAM (PROJECT) NUMBER: 12050 DKF

DATE OFFERED:

DATE ACCEPTED (AWARDED): Jan. 8, 1969

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: 10/15/68 Thru: 10/14/69	$17,897	$14,297

DESCRIPTION OF PROJECT:

The objective of this project is to develop a state of art report on the characteristics of oil and coal wastes. The study will include the procedures used by industry for aggrigating and handling these wastes and will determine the applicability and efficiencies of various treatment processes. Literature surveys, personal interviews and field studies will be used to define future research needs.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

ELD 1/69

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act(Clean Water Restoration Act).

GRANTEE: Illinois Institute of Technology

TITLE OF PROJECT: Efficiency of Fibrous Bed Coalescers

BUDGET PERIOD: Dec. 1, 1968-Nov. 30, 1969

PROJECT SITE: Chicago, Illinois

DATE AWARDED: Jan. 13, 1969

FEDERAL GRANT: $32,596 for the 1st year

TOTAL EST. PROJ. COST: $65,000

PROJECT NUMBER: WP-01452-01
12050 DRC

PPBS NO. 1205

DESCRIPTION OF PROJECT:

The objective of this research project is to develop a mathematical description of the removal of fine-divided, insoluble, liquid pollutants from an aqueous waste stream by means of a mixed fibrous bed, and to develop a procedure for designing such beds. The procedure will then be applied to the abatement of pollution from an actual industrial source in the Chicago area.

INQUIRIES: *Contact the* Industrial Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
[redacted]
Washington, D. C. 20242

INFORMATION SHEET

September 10, 1969
Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Class I Grant, under Section 5 R of the Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR: (Name and Address)
President & Fellows of Harvard College
Office of Research Contracts
1350 Massachusetts Avenue
Cambridge, Mass. 02138

PROJECT DIRECTOR: (Name and Address)
Dr. Lloyd A. Speilman
Pierce Hall - Room 124
Harvard University
Cambridge, Mass 02138

TITLE OF PROJECT: "Oil Dispersion Coalescence by Porous Solid Contact"

PROJECT SITE: Cambridge, Mass.

PROGRAM (PROJECT) NUMBER: 12050 DXR

DATE OFFERED: September 2, 1969

DATE ACCEPTED (AWARDED): Oct. 1, 1969

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: Sept. '69 Thru: Aug 31, '70	$16,157	$15,349

DESCRIPTION OF PROJECT: This project will be directed at clarifying the fundamental mechanisms underlying bed coalescense and the formulation of general design criteria through a mathematical description of pressure drop and coalescense performance. The formulation will be guided by the experimental determination of the extent of phase separation and pressure drop under controlled variation of inlet drop size, suspension chemistry, median grain size, bed depth, flow rate, and grain surface treatment. The results of this work should be of use in the design of separation processes for treating aqueous oil dispersions.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

8/69
ELD

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act(Clean Water Restoration Act).

GRANTEE: American Oil Company
910 S. Michigan Avenue
Chicago, Illinois 60680

TITLE OF PROJECT: Fluid-Bed Incineration of Petroleum Refinery Waste

PROJECT SITE: Mandan, North Dakota *DATE AWARDED:* May, 1968

FEDERAL GRANT: $170,265 *TOTAL EST. PROJ. COST:* $354,530

PROJECT NUMBER: WPRD-215-01-68
12050 EKT *PPBS NO.* 1205

DESCRIPTION OF PROJECT:

The project consists of: (1) the design and construction of a fluid-bed incineration system for treatment of refinery chemical and oil sludge wastes, and (2) the operation and evaluation of the system as a means of treating the refinery wastes.

Capacities up to 70 barrels per day, at full scale, are to be processed. The identity of operating problems and the limitations of the system are to be determined. The cost of treatment of the refinery waste by the proposed method will be developed for the system as optimized during the demonstration period.

INQUIRIES: Contact the Industrial Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
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Washington, D. C. 20242

8/68

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act(Clean Water Restoration Act).

GRANTEE: American Petroleum Institute
Air and Water Conservation
1271 Avenue of the Americas
New York, New York 10020

TITLE OF PROJECT: "Improved Capabilities of Biological Systems to Assimilate Oil"

PROJECT SITE: New York, New York

DATE AWARDED: June 20, 1968

FEDERAL GRANT: $51,470

TOTAL EST. PROJ. COST: $84,990

PROJECT NUMBER: WPRD 243-01-68
12050 DSH

PPBS NO. 1205

DESCRIPTION OF PROJECT:

The project will consist of a study of laboratory scale activated sludge waste treatment systems which will be operated to determine their tolerance to various types and amounts of hydrocarbons, the nature of the interference of the hydrocarbons, the fate of the hydrocarbons in the system, and to study methods for improving pretreatment of the influent and of improving the operation of the systems.

The work will be performed by Hydroscience, Inc. under the direction of an API Task Force. The project period will be 1 year.

INQUIRIES: ***Contact the*** Industrial Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
[redacted]
Washington, D. C. 20242

ELD/5-68

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act(Clean Water Restoration Act).

GRANTEE: American Oil Company
910 South Michigan Avenue
Chicago, Illinois

TITLE OF PROJECT: "Treatment of Refinery Effluent by a Unique Combination of Biological and Chemical Processes.

PROJECT SITE: Whiting, Indiana

DATE AWARDED: February 20, 1969

FEDERAL GRANT: $336,535

TOTAL EST. PROJ. COST: $1,737,775

PROJECT NUMBER: 1205 - 0 - DML

PPBS NO. 1205

DESCRIPTION OF PROJECT:

A 30 MGD scale project to demonstrate the advantages of using chemical coagulation and air flotation following biological conditioning to provide refinery effluent of high quality. To establish what operating flexibilities exist in such combination processing and the costs associated therewith. To evaluate a number of unique design features, including a hitherto unproven process for disposal of oily sludges, a unique and low-cost method for preventing sludge deposition in an aerated lagoon, a novel application of rotary-drum skimmers and a comparative study of alternate design features for air flotation.

INQUIRIES: *Contact the* Industrial Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
633 Indiana Ave. N.W.
Washington, D. C. 20242

INFORMATION SHEET - - -

RESEARCH & DEVELOPMENT CONTRACT

This sheet describes briefly an R & D Contract awarded under Sec. 6, Federal Water Pollution Control Act (Clean Water Restoration Act).

CONTRACTOR: Engineering Science, Inc.
150 East Foothill Blvd.
Arcadia, California 19006

TITLE OF PROJECT: The Characteristics and Pollutional Problems Associated with Petrochemical Wastes

PROJECT SITE: Austin, Texas

DATE AWARDED: Sept. 25, 1968

FEDERAL CONTRACT: $11,190.00

TOTAL PROJ. COST: $11,190.00

PROJECT NUMBER: 14-12-461
12050 DMT

PPBS NO: 1205

BRANCH CHIEF: William J. Lacy

PROJECT OFFICER: George Rey

DESCRIPTION OF PROJECT: The general scope of the project as developed under the Plan of Operation shall include a detailed development of the following:

1. History and Projection of petrochemical industry;
2. Definition, magnitude, and pollutants associated with these waste treatment problems;
3. Evaluation of control, treatment and disposal practices;
4. Listing of the special legal problems involved with petrochemical waste management;
5. Economic feasibility of present and future control methods, reflecting down stream uses; and
6. Evaluation of research needs.

The objectives of this proposed project will be achieved through a well coordinated plan of operation. A complete literature review shall be conducted using the numerous volumes available in the Engineering, Chemistry, Biology, and personal libraries located on the University of Texas campus. Additional information shall be obtained from various governmental agencies and selected industries. Additional data derived from the unpublished Environmental Health Engineering Reports shall be utilized.

INQUIRIES: Contact the Industrial Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
[redacted].
Washington, D.C. 20242

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 5 Federal Water Pollution Control Act(Clean Water Restoration Act).

GRANTEE: University of Washington
Professor Dale A. Carlson

TITLE OF PROJECT: Status and Research Needs for Potato Waste Waters

PROJECT SITE: Seattle, Washington **DATE AWARDED:** June 1, 1968

FEDERAL GRANT: $18,364 **TOTAL EST. PROJ. COST:** $19,331

PROJECT NUMBER: WP-01486-01 **PPBS NO.** 1206

DESCRIPTION OF PROJECT: The objective of this project is to prepare an exhaustive state-of-the-art report on potato processing waste waters including identification of process and waste streams, effects of process modification, types of processes and corresponding waste water treatment processes, effects of waste streams on receiving waters and land areas, and recent research developments. The report will include a discussion of current major research needs.

INQUIRIES: *Contact the* Industrial Pollution Control Branch, DED
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
[illegible]
Washington, D. C. 20242

RN 8/68

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 5, Federal Water Pollution Control Act(Clean Water Restoration Act).

GRANTEE: Department of Food Science and Technology
Oregon State University
Corvallis, Oregon 97331

TITLE OF PROJECT: "Water Pollution Abatement in the United States Seafoods Industry: State of the Art"

	EFFECTIVE DATE: June 30, 1969
PROJECT SITE: Corvallis, Oregon	**DATE AWARDED:** April 15, 1969
FEDERAL GRANT: $17,695	**TOTAL EST. PROJ. COST:** $18,652.00
PROJECT NUMBER: 12060 ECF	**PPBS NO.** 1206

DESCRIPTION OF PROJECT: The objective of this 8 months study will be the development of a State of the Art document on water pollution abatement technology and research for the seafoods processing industry.

INQUIRIES: *Contact the* Industrial Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior

Washington, D. C. 20242

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 5, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: National Canners Association
1133-20th Street, N. W.
Washington, D.C. 20036

TITLE OF PROJECT: "Production and Disposal Practices for Liquid Wastes From Canning and Freezing Fruits and Vegetables"

PROJECT SITE: NCA, Berkeley, Calif.
U. of Wisconsin, Madison

DATE AWARDED: May 6, 1969

FEDERAL GRANT: $20,025

TOTAL EST. PROJ. COST: $22,542

PROJECT NUMBER: 12060 EDK

PPBS NO. 1206

DESCRIPTION OF PROJECT:

The objective of this one year project will be the development of a state-of-art document to encompass: (1) current and projected contribution of this industry to the national water pollution problem; (2) description of present and anticipated waste treatment technology to include construction and operational data (3) identification of areas requiring further development.

INQUIRIES: *Contact the* Industrial Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
633 Indiana Ave. N.W.
Washington, D. C. 20242

HGK 4/7/69

INFORMATION SHEET

June 18, 1969
Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Class I Grant, under Section 5 Research, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR: (Name and Address)
Ohio State University Research Foundation
1314 Kinnear Rd.
Columbus, Ohio 43212

PROJECT DIRECTOR: (Name and Address)
Dr. W. James Harper
215 Vivian Hall
2121 Fyffe Road
Columbus, Ohio 43210

TITLE OF PROJECT: "State of the Art of Dairy Plant Wastes and Waste-Treatment Systems"

PROJECT SITE: Columbus, Ohio

PROGRAM (PROJECT) NUMBER: 12060 EGU

DATE OFFERED: June 17, 1969

DATE ACCEPTED (AWARDED): June 27, 1969

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: 7/1/69 Thru: 6/30/70	$ 18,505	$ 12,954

DESCRIPTION OF PROJECT:

The objective of this one year project is the development of a State of the Art document for the dairy industry. Plant processing methods, water utilization, waste streams in various size and type of operations, dairy food plant waste treatment systems as a function of processing practice, plant size and location, current industrial development in dairy food processing and waste treatment, present research in progress and future research needs in relation to dairy wastes, will be covered.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: Beet Sugar Development Foundation
156 South College Avenue
P. O. Box 538
Fort Collins, Colorado 80521

TITLE OF PROJECT: "State-of-Art, Sugarbeet Processing Waste Treatment"

PROJECT SITE: Fort Collins, Colorado

DATE AWARDED: April 18, 1969

FEDERAL GRANT: $14,310

TOTAL EST. PROJ. COST: $15,900

PROJECT NUMBER: 12060 DSI

PPBS NO. 1206

DESCRIPTION OF PROJECT:

The objective of this 8 month project will be the development of a state-of-art document emcompasing current domestic and foreign waste treatment technology in the sugarbeet processing industry. The report will include recommendations on major research needs.

INQUIRIES: *Contact the* Industrial Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
[redacted]
Washington, D. C. 20242

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 5, Federal Water Pollution Control Act(Clean Water Restoration Act).

GRANTEE: Beet Sugar Development Foundation
P.O. Box 538
Fort Collins, Colorado 80521

TITLE OF PROJECT: Anaerobic-Aerobic Sugar Beet Waste Treatment

PROJECT SITE: Tracy, California

DATE AWARDED: June 1, 1968

FEDERAL GRANT: $25,300 - 4th year

TOTAL EST. PROJ. COST: $243,450

PROJECT NUMBER: WPD 93-04-68

PPBS NO. 1206

DESCRIPTION OF PROJECT: The objective of this project is to demonstrate a solution to the pollution and odor problems encountered in beet sugar factory waste disposal. This will be accomplished by passing the wastes (mainly screened flume water) through system of anaerobic-facultative-aerobic lagoons set up in series. Some water from the aerobic lagoon will be recycled back to the surface of the anaerobic lagoon to eliminate odors.

INQUIRIES: *Contact the* Industrial Pollution Control Branch, DED
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
[redacted]
Washington, D. C. 20242

RN 8/68

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 5, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: Melbourne Water Science Institute
Water Science Laboratories
15-21 Earl Street
Carlton, Victoria, Australia

TITLE OF PROJECT: "Cannery Waste Treatment by Lagoons"

PROJECT SITE: Shepparton, Victoria Australia

DATE AWARDED: May 1, 1969

FEDERAL GRANT: $11,920

TOTAL EST. PROJ. COST: $61,810

PROJECT NUMBER: WPD 211-02-68
12060 EHS

PPBS NO. 1206

DESCRIPTION OF PROJECT:

The objective of this study will be to demonstrate the feasibility of treating fruit and vegetable processing wastes by anaerobic lagoons and oxidation ditches.

The existing 100,000 gpd facilities at Shepparton will continue to be used during the final year of 2 year project to evaluate and optimize operational parameters of the anaerobic-aerobic system operating jointly or independently.

INQUIRIES: *Contact the* Industrial Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
[redacted]
Washington, D. C. 20242

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3/69

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 5, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: Agricultural Experiment Station
University of Puerto Rico
Rio Piedras, Puerto Rico

TITLE OF PROJECT: Disposal of Rum Distillery Wastes

PROJECT SITE:	Rio Piedras, Puerto Rico	**DATE AWARDED:**	July 1, 1968
FEDERAL GRANT:	$46,252 - 1st year	**TOTAL EST. PROJ. COST:**	$85,400
PROJECT NUMBER:	WPD-226-01-68 12060 FDR	**PPBS NO.**	1206

DESCRIPTION OF PROJECT: The objective of this project is to develop the best method for the disposal of rum distillery waste. The waste will be subjected to detailed analysis and then will undergo pilot treatment by means of anaerobic digestion, activated sludge, and lagooning. These processes will then be evaluated in terms of efficiency and economics.

INQUIRIES: ***Contact the*** Industrial Pollution Control Branch, DED
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
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Washington, D. C. 20242

RN 8/68

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act(Clean Water Restoration Act).

GRANTEE: RAI Research Corporation
36-40 37th Street
Long Island City, New York 11101

TITLE OF PROJECT: Improvement of Treatment of Food Industry Waste

PROJECT SITE: Long Island City, N.Y. **DATE AWARDED:** Feb. 9, 1968

FEDERAL GRANT: $40,075/1 year **TOTAL EST. PROJ. COST:** $57,250

PROJECT NUMBER: WPRD 3-01-68 **PPBS NO.** 1206

PROJECT OFFICER: Allyn Richardson NERO

DESCRIPTION OF PROJECT:

To investigate on a laboratory scale electrochemical oxidation of milk whey as a method of waste treatment.

INQUIRIES: *Contact the* Industrial Pollution Control Branch, DED
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
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Washington, D. C. 20242

HGK 8/68

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: The R. T. French Company
Shelley, Idaho

TITLE OF PROJECT: "Aerobic Secondary Treatment of Potato Processing Wastes with Mechancial Aeration"

PROJECT SITE: Shelley, Idaho ***DATE AWARDED:*** Aug. 1967

FEDERAL GRANT: $483,217 ***TOTAL EST. PROJ. COST:*** $690,310

PROJECT NUMBER: WPRD 15-01-R1-67
12060 EHV
PPBS NO. 1206

DESCRIPTION OF PROJECT: This project is designed to demonstrate the effectiveness of an aerobic secondary treatment plant for treating the total flow of potato processing wastes (1 MGD and 14,580 lb. BOD). The aerobic treatment will follow an existing primary treatment plant.

The secondary treatment plant will consist of three earthen aeration basins equipped with mechancial surface aerators, a mechancially cleaned secondary clarifier, an aerobic digester, and sludge disposal beds. In addition, a silt removal system will be constructed, consisting of screening facilities, a pumping station, and two earthen ponds to retain silt accumulations for one processing season.

The aeration system will be tested under three operating schemes: 1.) as an extended aeration system in which biological sludge is returned to the aeration basin and the excess, to the digester; 2.) as a flow-through aeration basin with sludge carryover into the effluent; and 3.) as an intermittent aeration system in which the clarified upper portion of the aeration basin contents is discharged directly to the river. During these operations, studies will be made on the effects of foaming ice, temperature, pH, and nutrients on the efficiency of the process.

STATUS: Contracts for long lead items such as the aeration equipment and clarifiers to be awarded within thirty days. Final design and specifications for construction of the treatment facility to be completed on or about May 1, 1968.

INQUIRIES: ***Contact the*** Industrial Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
[illegible]
Washington, D. C. 20242

4/68

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act(Clean Water Restoration Act).

GRANTEE: FMC Corporation

TITLE OF PROJECT: "Cannery Waste Treatment by the Kehr Activated Sludge Process"

PROJECT SITE: Santa Clara, California **DATE AWARDED:** December, 1966

FEDERAL GRANT: $29,300 **TOTAL EST. PROJ. COST:** $43,200

PROJECT NUMBER: WPRD 18-01-67
12060 EZP **PPBS NO.** 1206

DESCRIPTION OF PROJECT: The Kehr Process, in essence, involves a combining of activated sludge aeration of 10,000 to 15,000 mg/l mixed liquor solids with aerobic digestion in a single aeration tank. This provides high removals of BOD, solids, and nutrients; facility for periodic high strength wastes; a stabilized, drainable water sludge; and comparatively low physical plant costs.

The objectives are to:

1. Demonstrate the revised Kehr Process using liquid-solids separation by high-rate flotation-densification system of activated sludge solids.

2. Demonstrate effectiveness of the process for treating cannery wastes combined with domestic sewage having a BOD_5 of 1000 to 2000 mg/l.

3. Demonstrate performance of the process with densified return sludge solids of 4% to 8% on a dry weight basis, thus affecting plant economy by use of smaller tankage volume.

4. Determine processing requirements for application to a full-scale treatment plant.

INQUIRIES: *Contact the* Industrial Pollution Control Branch, DED
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
[illegible]
Washington, D. C. 20242

8/68

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act(Clean Water Restoration Act).

GRANTEE: Minute Maid Company
Orlando, Florida

TITLE OF PROJECT: "Removal of Organics and Nutrients from Citrus Processing Plant Wastes"

PROJECT SITE: Leesburg and Auburndale Florida ***DATE AWARDED:*** December 1966

FEDERAL GRANT: $350,000 ***TOTAL EST. PROJ. COST:*** $550,000

PROJECT NUMBER: WPRD 38-01-67 ***PPBS NO.*** 1206

DESCRIPTION OF PROJECT:

In Florida, about 52 plants of the citrus industry discharge about 130 mgd of waste, having an organic concentration amounting to 318,000 lbs. of BOD daily, into streams and lakes of Florida. This project is a step towards solving this pollution problem.

The objective of this project is to demonstrate the design and operational factors for organic and nutrient removal of citrus process waste by the activated sludge process, by stabilization in oxidation ponds with and without induced aeration, and absorption of nutrients by plant life with subsequent drying of materials in citrus feed mill.

STATUS: Bids have been reviewed, selected, and contract awarded for construction of treatment facility at Auburndale. At Leesburg, the site is operational and worthwhile information being collected on mixed municipal and citrus processing wastes by the activated sludge system.

INQUIRIES: *Contact the* Industrial Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
~~[illegible]~~
Washington, D. C. 20242

4/68

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: Beet Sugar Development Foundation

TITLE OF PROJECT: "Concentration of Sugar Beet Wastes for Economic Treatment with Biological Systems"

PROJECT SITE: Fort Collins, Colorado **DATE AWARDED:** December, 1966

FEDERAL GRANT: $102,000 **TOTAL EST. PROJ. COST:** $372,500

PROJECT NUMBER: WPRD 43-01-67
12060 FAK
PPBS NO. 1206

DESCRIPTION OF PROJECT: The project is one phase of research to find an economic chemical or biological system to treat high volumes of sugar beet factory waste. One or more successful processes are necessary to satisfy effluent standards in States where sugar beets are processed.

The objective of the project is to concentrate sugar-beet factory wastes by chemical precipitation and reuse of the decanted solution in a closed recirculation system. The excess water accumulated during the operation will be treated by anaerobic and/or aerobic processes to remove BOD prior to discharge. The bioactivity will be studied concurrently.

INQUIRIES: ***Contact the*** Industrial Pollution Control Branch, DED
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
[redacted].
Washington, D. C. 20242

8/68

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act(Clean Water Restoration Act).

GRANTEE: North Star Research & Development Institute
3100 38th Avenue South
Minneapolis, Minnesota 55406

TITLE OF PROJECT: Use of Fungi Imperfecti in Waste Control

PROJECT SITE: Minneapolis, Minnesota

DATE AWARDED: Sept. 1, 1967

FEDERAL GRANT: $76,585

TOTAL EST. PROJ. COST: $118,585

PROJECT NUMBER: WPRD 49-01-68
12060 EHT

PPBS NO. 1206

DESCRIPTION OF PROJECT:

The objective of this 2 year project is to evaluate rapidly growing fungi strains for use in biological waste treatment processes applicable to waste streams from soybean and corn processing operations.

Synthesized mycelium will be evaluated for use as animal and/or human dietary supplement.

Parameters for industrial scale-up to accomodate a 1-3 mgd process operation will be determined based on results from a 50 gpd pilot plant operating on a continuous culture and flow basis.

INQUIRIES: *Contact the* Industrial Pollution Control Branch, DED
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
[redacted]
Washington, D. C. 20242

HGK 8/68

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act(Clean Water Restoration Act).

GRANTEE: John Morrell & Company
Ottumwa, Iowa 52501

TITLE OF PROJECT: "Construction and Study of a Demonstration Plant Utilizing the Aerobic Channel Method for Treating Packinghouse Wastes"

PROJECT SITE: Ottumwa, Iowa

DATE AWARDED: December 1966

FEDERAL GRANT: $489,000

TOTAL EST. PROJ. COST: $815,000

PROJECT NUMBER: WPRD-54-01-67
12060 EUB

PPBS NO. 1206

DESCRIPTION OF PROJECT: Four oxidation channels will be constructed to handle an equivalent load of 20,000 lbs. of BOD/day from a packinghouse on a 7-day basis with estimated flow of 3.5 mgd. The objective is to find an efficient, effective, and economical method of treating raw packinghouse wastes so they can be discharged directly into streams.

Each channel will be 460 ft. X 60 ft. with a capacity of 150,000 cu. ft. Channels 1&2 will receive raw wastewater from existing primary treatment systems. The overflow will be directed into Channels 3&4 which will be operated intermittently as aerator and settling basins. Channel 4 will allow the sludge to be returned to Channels 1&2 or removed for harvesting. The solids removed will be centrifuged or evaporated and dried.

The most feasible way of handling solids will be determined. Tests will be conducted to determine if the dried solids can be used an an animal-food supplement.

The process will be designed to give variable rates of aeration and flow to obtain maximum bio-chemical oxygen demand and nitrogen removal. The flow will be sampled and analyzed for total nitrogen, chemical oxygen demand, suspended solids, total solids, and grease; weekly samples will be tested for total volatile solids, total fixed solids, phosphate, total bacterial content, and coliform count.

STATUS: Final design and specifications for the treatment facility have been completed. Expect to advertise for bids no latter than April 15,1968 and begin construction during May 1968.

INQUIRIES: *Contact the* Industrial Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
[redacted]
Washington, D. C. 20242

4/68

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act(Clean Water Restoration Act).

GRANTEE: Vahlsing, Inc.
Easton, Maine

TITLE OF PROJECT: "Treatment of Alkaline Wastes from Potato Processing"

PROJECT SITE: Easton, Maine

DATE AWARDED: December 1966

FEDERAL GRANT: $196,014

TOTAL EST. PROJ. COST: $280,020

PROJECT NUMBER: WPRD 56-01-67
12060 FAG

PPBS NO. 1206

DESCRIPTION OF PROJECT:

The objectives of this project are to demonstrate the feasibility of; treating potato processing waste using the activated sludge system ; combining potato processing waste with sugar beet refining waste; and the feasibility of three in-plant closed waste water systems in the sugar beet plant.

The project will provide extremely valuable data to both the potato processing and beet sugar industry. The aim is also to determine if a $30 million industrial complex, composed of potato and sugar beet processing and a residential community, can exist on a small stream, as is proposed, and have clean water.

STATUS: Expect to receive final design and specifications for construction of the 600 gpm pilot scale activated sludge system, and proceed with advertisement thereof April 1, 1968, construction to begin shortly after May 1, 1968.

INQUIRIES: *Contact the* Industrial Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
~~[illegible]~~
Washington, D. C. 20242

4/68

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act(Clean Water Restoration Act).

GRANTEE: Snokist Growers (formerly Blue Ribbon-Big Y Growers)
Yakima, Washington

TITLE OF PROJECT: "Pollution Prevention by Aeration of Fruit Processing Wastes."

PROJECT SITE: Yakima, Washington

DATE AWARDED: August 1967

FEDERAL GRANT: $347,669

TOTAL EST. PROJ. COST: $572,262

PROJECT NUMBER: WPRD 58-01-68
12060 FAD

PPBS NO. 1206

DESCRIPTION OF PROJECT: The cannery now discharges it fruit-processing wastes into the Yakima River. The objective of this project is to determine the most economical method of removing 90% of the BOD from an expected flow of 2.6 MGD with a BOD_5 loading of 20,000 lbs.

Aeration methods, including modifications to the activated sludge process, will be tested on a plant-size scale to determine their effectiveness in treating fruit processing wastes.

Existing and specially designed new facilities, including lagoons and clarifiers, will be used in prototype studies of the effects of varying amounts of aeration, waste loadings, waste detention, sludge returns, and chemical on the BOD level.

During the 1967 canning season, the lagoon and clarifier will be operated as a completely mixed activated-sludge facility. The new lagoon, with added aerators will operated as an aeration lagoon with no sludge return, each under varied loadings. During the 1968 canning season the facilities will be operated as a modified contact stabilization facility.

Information on the modifications will be compared and the results will be applied to the activated sludge process for use by industry and government as method for the biological treatment offruit processing wastes.

STATUS: Aeration basin completed and operational. Contracts being awarded for balance of construction. Facility to be completely operational by September 1968.

INQUIRIES: *Contact the* Industrial Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
~~[illegible]~~
Washington, D. C. 20242

4/68

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act(Clean Water Restoration Act).

GRANTEE: National Canners Association Research Foundation
1133 20th Street, N. W.
Washington, D. C. 20036

TITLE OF PROJECT: "Reconditioning and Reuse of Food Processing Brines"

PROJECT SITE: Central Valley, Calif. **DATE AWARDED:** February 1, 1968

FEDERAL GRANT: $31,500 **TOTAL EST. PROJ. COST:** $45,000

PROJECT NUMBER: WPRD-134-01-68 **PPBS NO.** 1206
12060 EHU

DESCRIPTION OF PROJECT: Briefly the proposal is to conduct a pilot scale study to determine the feasibility of re-using spent brines from storage and processing operations in olive packing by reconditioning the brine through a charcoal absorption and filtration column. The portable filter will be operated throughout the duration of the two year project at each of four locations in the California Central Valley area.

The supporting collection, reduction and analysis of data will be directed toward eliminating the present tie-in to municipal sewage system as well as lagoon systems used by olive processors and develop economic and effectiveness data for full scale development.

INQUIRIES: *Contact the* Industrial Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
[redacted]
Washington, D. C. 20242

8/68

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act(Clean Water Restoration Act).

GRANTEE: National Canners Association
1133 20th Street, N.W.
Washington, D.C. 20036

TITLE OF PROJECT: "Integrated Treatment of Liquid Wastes from Food Canning Operations"

PROJECT SITE: San Jose, California **DATE AWARDED:** 2/14/68

FEDERAL GRANT: $33,330 **TOTAL EST. PROJ. COST:** $55,120

PROJECT NUMBER: WPRD 151-01-68 **PPBS NO.** 1206

DESCRIPTION OF PROJECT: The objectives of this proposal are as follows: (1) to determine the feasibility of employing a high rate trickling filter in the San Jose, California canning plant to treat strong organic wastes encountered in vegetable and fruit processing operations, which although low in volume (approx. 20% of total), contribute as much as 60% to the total BOD load. The filter will be 14 ft. in diameter and 21.5 ft. high, employing synthetic media and operating in a range between 100 and 200 gpm. It will be subjected to variations in flow, pH control and nutrient addition to determine its optimun working parameters. (2) To determine the effectiveness of using an air flotation process with and without addition of flocculants in removing suspended solids prior to seconary treatment. (3) To evaluate center discharge solids separation techniques and its effect on the total BOD content.

A study will also be made of the usage of edible acids as a bacteriostatic agent to prevent growth in recirculated flume water. Following the one year testing operation, it is proposed to select units to be incorporated in full scale plant operations for a further demonstration project. The reason for the low project cost is due to NCA already having on hand several pieces of equipment required to test these processes.

STATUS: Received worthwhile information on operation of units during last fall's processing operations. Will continue with evaluation of the various units this fall.

INQUIRIES: *Contact the* Industrial Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
[redacted]
Washington, D. C. 20242

4/68

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: Winter Garden Citrus Products Cooperative
P. O. Box 399
Winter Garden, Florida

TITLE OF PROJECT: "Lime Treatment and Inplant Reuse of an Activated Sludge Plant Effluent in the Citrus Processing Industry

PROJECT SITE: Winter Garden, Florida **DATE AWARDED:** March 22, 1968

FEDERAL GRANT: $165,000 **TOTAL EST. PROJ. COST:** $397,300

PROJECT NUMBER: WPRD-161-DI-(R-2)-68 **PPBS NO.** 1206
12060 EZY

DESCRIPTION OF PROJECT: The objective of this proposal will be to develop operational parameters and conduct an economic evaluation on lime treatment of effluent from a 2 mgd. activated sludge system treating citrus wastes and in-plant reuse of the lime treatment effluent. This study will cover lime treatment, with the addition of coagulant aids, and dewatering of sludges by centrifugation for usage in cattle feed preparation. Determination will be made on this system's effective in further reducing BOD, COD, and nutrients found in the activated sludge effluent.

The proposed project intends to demonstrate the effectiveness of lime precipitation on effluent from a 2 mgd. activated sludge system treating citrus wastes. The activated sludge system consists of an aeration pond providing from 24 to 36 hours detention time with the overflow being directed into a final clarifier. Operation of the activated sludge system will afford pH control along with nutrient supplementation and sludge recirculation.

INQUIRIES: ***Contact the*** Industrial Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
[redacted]W.
Washington, D. C. 20242

4/68

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: Swift and Company
R&D Center
1919 Swift Drive
Oak Brook, Illinois 60521

TITLE OF PROJECT: "Removal and Recovery of Fatty Materials from Edible Fat and Oil Refinery Effluents"

PROJECT SITE: Bradley, Illinois **DATE AWARDED:** JUL 1 0 1968

FEDERAL GRANT: $249,307 **TOTAL EST. PROJ. COST:** $389,970

PROJECT NUMBER: WPRD-185-01-(R-1)-68 **PPBS NO.** 1206
12060 DQV

DESCRIPTION OF PROJECT:

The 18 month study to be conducted at the Swift and Company Bradley Refinery plant will have as its main objectives to demonstrate the effectiveness and economics of employing air flotation for the removal and recovery of fatty material present in water eminating from processing operations.

In addition to an extensive study of flocculating agents, a complete characterization of processing waste streams is planned. Laboratory analysis will include BOD, COD, ether solubles and suspended solids determinations, etc.

INQUIRIES: *Contact the* Industrial Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
[redacted]
Washington, D. C. 20242

HGK:5/68

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act(Clean Water Restoration Act).

GRANTEE: Dairy Research and Development Corporation

TITLE OF PROJECT: "Elimination of Pollution by and Utilization of Protein Concentrates (Dried Whey) from Milk Residues of Cheese Making"

PROJECT SITE: Remsen, New York	**DATE AWARDED:** December 19, 1968
FEDERAL GRANT: $ 551,350	**TOTAL EST. PROJ. COST:** $4,234,071
PROJECT NUMBER: WPRD-219-01-R1 12060 DEQ	**PPBS NO.** 1206

DESCRIPTION OF PROJECT: A development and full scale demonstration for a process for the conversion of dairy whey into saleable food products by evaporation and spray drying methods. The conversion of whey to a useable food product in lieu of its disposal as a waste product from cheese manufacturing is the pollution abatement method to be developed and demonstrated. Research will be conducted on the use of dried whey as a supplement to various food products.

INQUIRIES: *Contact the* Industrial Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
[illegible]
Washington, D. C. 20242

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act(Clean Water Restoration Act).

GRANTEE: Corn Products Company
Corporate Engineering
P.O. Box 345
Argo, Illinois 60501

TITLE OF PROJECT: "Treatment of Wastes from the Wet-Milling Industry"

PROJECT SITE: Pekin, Illinois

DATE AWARDED: July 24, 1968

FEDERAL GRANT: $482,680

TOTAL EST. PROJ. COST: $2,656,400

PROJECT NUMBER: WPRD-221-01-(R-1)-68
12060 DPE

PPBS NO. 1206

DESCRIPTION OF PROJECT: The 3½ year project entails the design, construction, operation, and an economic and technical evaluation of a 1 mgd completely mixed aerobic system for treatment of corn refining wastes.

INQUIRIES: *Contact the* Industrial Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
[redacted]
Washington, D. C. 20242

8/68

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act(Clean Water Restoration Act).

GRANTEE: University of Oklahoma Research Institute
1808 Newton Drive
Norman, Oklahoma 73069

TITLE OF PROJECT: "Demonstration of a Full Scale Waste Treatment System for a Cannery"

PROJECT SITE: Stilwell, Oklahoma **DATE AWARDED:** JUL 0 5 1968

FEDERAL GRANT: $75,226 **TOTAL EST. PROJ. COST:** $117,807

PROJECT NUMBER: WPRD-230-01-(R-1) 68 **PPBS NO.** 1206
12060 DSB

DESCRIPTION OF PROJECT: The objectives of this 18 month study will be to conduct an economic and technical evaluation of a 1.5 mgd biological system employing a combination of both the minimal solids and extended aeration techniques to treat high strength, nutritionally unbalanced cannery wastes.

INQUIRIES: *Contact the* Industrial Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
[redacted]
Washington, D. C. 20242

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act(Clean Water Restoration Act).

GRANTEE: Farmbest, Inc.
Denison, Iowa

TITLE OF PROJECT: Waste Treatment Facility, Farmbest, Inc., Denison, Iowa

PROJECT SITE: Denison, Iowa

DATE AWARDED: October 5, 1968

FEDERAL GRANT: $289,790

TOTAL EST. PROJ. COST: $755,587

PROJECT NUMBER: WPRD 241-01-68
12060 DFF

PPBS NO. 1206

DESCRIPTION OF PROJECT:

This is a 15 month project to demonstrate, over one full year of operation, the application of anaerobic lagoons and two-stage trickling filters for the treatment of strong wastes resulting from the slaughtering and processing of hogs. This plant kills about 5000 hogs daily and waste flows average about 0.85 mgd. Data will be collected on the strength of wastes and the efficiency of individual treatment units under various loadings and weather conditions so the results can be projected for new plants using any combinations of these treatment units.

INQUIRIES: *Contact the*

Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
[redacted]
Washington, D. C. 20242

INFORMATION SHEET

June 3, 1969
Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Class V Grant, under Section 6(b), Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR: (Name and Address)
National Canners Association, Research Foundation
1133 20th Street, N.W.
Washington, D. C. 20036

PROJECT DIRECTOR: (Name and Address)
Mr. Walter Mercer, NCA Western Research Laboratory
1950 Sixth Street
Berkeley, California 94710

TITLE OF PROJECT: "Evaluation of Controlled Temperature and Forced Aeration in Trickling Filter Treatment of Food Canning Waste Waters"

PROJECT SITE: San Jose, California

PROGRAM (PROJECT) NUMBER: 12060 EAE

DATE OFFERED: May 15, 1969

DATE ACCEPTED (AWARDED): June 10, 1969

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: May 15, 1969 Thru: Nov. 15, 1969	$ 28,712	$ 18,350

DESCRIPTION OF PROJECT: The objectives of this project to be conducted at the DelMonte Corporation Plant No. 3 at San Jose, California are as follows:

1. To evaluate the performance and BOD reduction capacity on high strength liquid canning wastes of a 10,000 gpd trickling filter unit containing such special features as forced aeration and temperature control of the treatment column preceeded by grinding and screening components.
2. To compare the efficiency of this unit with that of the trickling filter without temperature control and forced aeration operated under WPRD 151-01-68, by subjecting them both to identical loadings eminating from the same waste source.
3. To incorporate the results of this evaluation into the design of a full scale demonstration project to be implemented in 1970. The six month project is an extension of work initiated under WPRD 251-01-68.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

INFORMATION SHEET

6/16/69
Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Class V Grant, under Section 6(b), Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR: (Name and Address)
Gold Kist Poultry Division
Cotton Producers Association
P. O. Box 2210
Atlanta, Georgia 30301

PROJECT DIRECTOR: (Name and Address)
Byron Hawkins
Gold Kist Poultry
910 Latta Street
Durham, N.C. 27704

TITLE OF PROJECT: "Water and Waste Management in Poultry Processing"

PROJECT SITE:
Gold Kist Poultry
910 Latta Street
Durham, N.C.

PROGRAM (PROJECT) NUMBER: 12060 EGV

DATE OFFERED: June 12, 1969

DATE ACCEPTED (AWARDED): June 26, 1969

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: 7/1/69 Thru: 6/30/71	$ 283,381	$198,366

DESCRIPTION OF PROJECT:

The University of North Carolina will conduct a two year study which involves changes in the Gold Kist processing operations for demonstration of effective in-plant control of both water use and discharge of effluent from poultry processing. The project encompasses water use and waste abatement throughout the plant, from water intake through final waste-water collection and control.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

INFORMATION SHEET

7/10/69
Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Class V Grant, under Section 6(b), Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR:
(Name and Address)
Western Potato Service, Inc.
P. O. Box 1391 Highway #2 West
Grand Forks, North Dakota 58201

PROJECT DIRECTOR:
(Name and Address)
James L. Martin
Potato Service, Inc.
P. O. Box 809
Presque Isle, Maine 04769

TITLE OF PROJECT: "Full Scale Demonstration and Evaluation of Potato Dry and Wet Caustic Peeling Processes"

PROJECT SITE: Presque Isle Maine (Wet)
Grand Forks, North Dakota (Dry)

PROGRAM (PROJECT) NUMBER: 12060 EIG

DATE OFFERED: 7/1/69

DATE ACCEPTED (AWARDED): July 22, 1969

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: 7/1/69 Thru: 1/1/71	$1,042,212	$396,574

DESCRIPTION OF PROJECT:

The objective of this grant will be to demonstrate at full scale the economics and pollution reduction characteristics of a potato "dry" caustic peeling system and use as a base for comparison data to be obtained from a similar facility employing the conventional "wet" caustic peeling operation.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

INFORMATION SHEET

August 18, 1969
Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Class V Grant, under Section 6(b), Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR: (Name and Address)
Crowley's Milk Company, Inc.
145 Conklin Avenue
Binghamton, N.Y. 13902

PROJECT DIRECTOR: (Name and Address)
Dr. Robert R. Zall
Director of Research & Production
Crowley's Milk Company, Inc.
145 Conklin Avenue
Binghamton, N. Y. 13902

TITLE OF PROJECT: "Development and Demonstration of an Ultrafiltration Plant for the Abatement of Pollution from Cottage Cheese Whey"

PROJECT SITE: Ph. 1 Binghamton, New York

PROGRAM (PROJECT) NUMBER: 12060 DXF

DATE OFFERED: August 8, 1969

DATE ACCEPTED (AWARDED): Sept. 3, 1969

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: 7/1/69 Thru: 1/1/72	$914,081	$495,856

DESCRIPTION OF PROJECT:

A two stage Ultrafiltration system for the separation and concentration of protein and lactose or straight acid whey concentration with a resulting influent BOD reduction of 99% will be demonstrated. The first phase, lasting 13 months, calls for the design, detailed engineering, construction, operation and evaluation in Binghamton, N. Y. of a 10,000 lb/day UF system and will include the design of a 250,000 lb/day system for full scale demonstration under phase II. Duration of phase II will be 17 months.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

INFORMATION SHEET

September 10, 1969
Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Demonstration Grant under Section 6B, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR: (Name and Address) Green Giant Company
LeSueur, Minnesota 56058

PROJECT DIRECTOR: (Name and Address) Dr. E. E. Erickson
North Star Research & Development Inst.
3100 38th Avenue
Minneapolis, Minnesota 55406

TITLE OF PROJECT: Pilot Plant Installation for Use of Fungi Imperfecti on Vegetable Wastes

PROJECT SITE: North Star Research & Development Institute
Minneapolis, Minnesota

PROGRAM (PROJECT) NUMBER: 12060 EDZ

DATE OFFERED: September 1, 1969

DATE ACCEPTED (AWARDED): Sept. 23, 1969

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: 7/1/69 Thru: 12/31/70	$72,860	$49,742

DESCRIPTION OF PROJECT: To demonstrate and evaluate on a pilot scale basis the use of fungi imperfecti as a biological agent in a aerated treatment system which treats high BOD vegetable processing wastes. According to bench scale tests the fungi are capable of removing organic nutrients with a related BOD reduction in excess of 98% with a 20 hour residence time. An aerated lagoon and aerated ditch will be employed to evaluate the fungi as a system component and the related operational and system characteristics will be defined.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

September 22, 1969
Date (to be announced)

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This project is a Demonstration grant under Section 6(b), Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR: Kent Cheese Company
(name and address)
1931 North 15th Avenue
Melrose Park, Illinois 60160

PROJECT DIRECTOR: Allen E. Fehr
(name and address)
626 West South Street
Freeport, Illinois 61032

TITLE OF PROJECT: "Kent Cheese Company - Waste Treatment Facility"

PROJECT SITE: Kent, Illinois

PROGRAM (PROJECT) NUMBER: 12060 EKQ

OFFERED: September 11, 1969

DATE ACCEPTED (AWARDED): Sept. 26, 1969

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: 7/1/69 Thru: 11/1/70	$65,722.80	$46,006.00

DESCRIPTION OF PROJECT:

Demonstrate the effectiveness of aerated lagoons for the treatment of cheese whey process rinse water and permeate from a whey reverse osmosis unit. The treatment system will utilize two aerobic lagoons inseries with submerged mechanical aeration equipment producing an extended aeration process. Data will be collected to allow evaluation of the extented aeration process to cheese whey waste flows.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

[illegible]

10/6/69
Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Demonstration, under Section 6B, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR: (Name and Address)
Illinois Packing Company
911 West 37th Place
Chicago, Illinois 60609

PROJECT DIRECTOR: (Name and Address) Roy J. Ricci, Procedyne Corp.; 221 Somerset St.
New Brunswick, N.J. 08903

TITLE OF PROJECT: A Method of Manure Disposal for a Beef Packing Operation

PROJECT SITE: Illinois Packing Co.

PROGRAM (PROJECT) NUMBER: 12060 EOF

DATE OFFERED: Sept. 24, 1969

DATE ACCEPTED (AWARDED): Oct. 22, 1969

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: 10/22/69 Thru: 6/21/71	$ 156,000	$ 93,400

DESCRIPTION OF PROJECT:

A twenty month project to demonstrate the feasibility of the incineration of cattle paunch and ground manure. The project objectives will include the following:

To segregate existing process waste streams for concentration of waste solids.
To develop physical parameters for process waste streams.
To design and construct a fluidized bed incineration unit.
To investigate and document the treatment system performance, the economics, optimal operating characteristics and the significance of the system in terms of application to other segments of the animal production industry.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

INFORMATION SHEET

December 1, 1969
Date [illegible]

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Demonstration Grant, under Section 6(b),
Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR: (Name and Address)
Widmer's Wine Cellars, Inc.
Naples, New York 14512

PROJECT DIRECTOR: (Name and Address)
Edwin Haynes
Widmer's Wine Cellars, Inc.
Naples, New York 14512

TITLE OF PROJECT: Winery Wastewater-Characterization and Treatment

PROJECT SITE: Naples, New York

PROGRAM (PROJECT) NUMBER: 12060 EUZ

DATE OFFERED: November 20, 1969

DATE ACCEPTED (AWARDED): Dec. 18, 1969

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: 12/18/69 26 months Thru: 2/17/72	$284,000	$148,900

DESCRIPTION OF PROJECT:

This project includes design, construction and operation of an extended aeration waste treatment plant to treat the process wastewaters from a winery.

The activities of the project are to characterize the winery wasteflow; design, construct and operate an extended aeration waste treatment system; study and document the treatment system, optimize the system; and determine the effectiveness of nutrient addition to the operation of the system.

The facility will be designed for a 120,000 gpd flow.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C.

INFORMATION SHEET

December 4, 1969
Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Demonstration, under Section 6(b), Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR: (Name and Address)
National Canners Association
Research Foundation
1133 20th Street
Washington, D.C. 20036

PROJECT DIRECTOR: (Name and Address)
Jack W. Ralls
National Canners Association
1950 Sixth Street
Berkeley, California 94710

TITLE OF PROJECT: Reduction of Salt Content of Food Processing Liquid Waste Effluent

PROJECT SITE: Berkeley, California

PROGRAM (PROJECT) NUMBER: 12060 DXL

DATE OFFERED: November 24, 1969

DATE ACCEPTED (AWARDED): Dec. 8, 1969

Grant or Contract Period	Eligible Grant Period Costs	[illegible]
From: 12/8/69 12 month Thru: 12/7/70	$94,208	$64,382

DESCRIPTION OF PROJECT:

The project will demonstrate the effectiveness of an ion exchange system for the treatment of olive brine waste water. The 10,000 gpd pilot unit will use calcium hydroxide as a resin regenerant and will be operated jointly by the National Canners Association and Aqua Ion Corporation. The operating parameters of the system will be established and scale up factors determined. It is anticipated that the degree of treatment will encourage the olive industry to consider water reuse and product recovery when full scale installations are considered.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration

INFORMATION SHEET

DEC 9 1969
Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Class V Grant, under Section 6(b), Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR: Beefland International, Inc.
(Name and Address) Council Bluffs, Iowa 51501

PROJECT DIRECTOR: Ray Burke, Vice President
(Name and Address) Beefland International, Inc.
Council Bluffs, Iowa 51501
(712) 328-3941

TITLE OF PROJECT: "Elimination of Water Pollution by Packing House Animal Paunch and Blood"

PROJECT SITE: Council Bluffs, Iowa

PROGRAM (PROJECT) NUMBER: 12060 FDS

DATE OFFERED: Nov. 25, 1969

DATE ACCEPTED (AWARDED): Dec. 23, 1969

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: Nov. 10, 69 Thru: May 10, 71	$ 367,870	$ 161,398

DESCRIPTION OF PROJECT:

This 18 month project will demonstrate the economic and technical feasibility of completely segregating blood and paunch from slaughterhouse operations and converting these materials into animal feed ingredients. Two dehydrators will be installed at Beefland International, Inc. and utilized to process the material generated from anticipated cattle kills of 250 head per hour.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act(Clean Water Restoration Act).

GRANTEE: The Johns-Hopkins University, Dr. Charles E. Renn
Department of Environmental Engineering Science
Baltimore, Maryland 21218

TITLE OF PROJECT: Management of Recycled Waste-Process Water Ponds

PROJECT SITE: Hampstead, Maryland

DATE AWARDED: December 1, 1967

FEDERAL GRANT: $39,627.00

TOTAL EST. PROJ. COST: $180,921

PROJECT NUMBER: WPD 117-03

PPBS NO. 1207

Grant Period: 12 months

DESCRIPTION OF PROJECT:

The purpose of this project is to develop detailed information on the operational techniques required to permit the utilization of a limited supply of treated domestic wastewaters for a variety of manufacturing processes. Requirements for control of biological processes in wastewaters impounded and recycled extensively within manufacturing processes and operations is being investigated.

The project is being conducted at the Black and Decker Manufacturing Companys' Hampstead, Md. plant.Operations in the plant involve stamping, pressing, punching, grinding, forging, assembly, and performance testing in a controlled environment requiring 2600 tons of refrigeration for air conditioning during the warm months. The water supply from wells is very limited. Domestic wastewaters are treated and routed to a nine acre impoundment for recirculation through the plant processes and operations. A "no-additional-cost" time extension has been requested to permit further evaluation through another summer season.

INQUIRIES: ***Contact the*** Industrial Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
633 Indiana Ave. N.W.
Washington, D. C. 20242

ELD 3/69

INFORMATION SHEET--

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act(Clean Water Restoration Act).

GRANTEE: Johns-Manville Products Corporation
Manville, New Jersey

TITLE OF PROJECT: "Experimental Closed Water System to Eliminate Waste Water Discharge from Johns-Manville Plant No. 3."

PROJECT SITE: Defiance, Ohio

DATE AWARDED: September 1, 1967

FEDERAL GRANT: $82,350

TOTAL EST. PROJ. COST: $164,700

PROJECT NUMBER: WPRD 87-01-67
12080 EZF

PPBS NO. 1208

DESCRIPTION OF PROJECT:

This project is designed to demonstrate the effectiveness of a total process-water reuse system involving diatomite filtration to treat wastes from the production of glass fiber insulations and elements.

The objective of this project is to eliminate completely the discharge of phenolic waste water from the Johns-Manville Plant. The plant now discharges 30 to 50 gpm of waste water which eventually flows into the Maumee River. This river has been cited as one of the critically polluted rivers of the nation.

The waste water now contains glass fiber, caustic, and phenols. As a part of the project, all of the process waste water will be recirculated. The residual solids, consisting of glass fibers and phenolic binders, will be removed by screening and diatomite filtration. Caustic cleaning solutions will be segregated from the manufacturing process water, ponded, and treated as required for dumping or for return to plant process use.

PROGRESS TO MARCH 25, 1968: Approval to purchase certain long-lead items of equipment on low bids has been given with repayment subject to approval of the final plans and specifications. The final plans and specifications are complete except for theelectrical wiring and should be submitted for approval within two weeks.

INQUIRIES: *Contact the* Industrial Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior

ELD:3/68

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: North Carolina State University
Raleigh, North Carolina 27607

TITLE OF PROJECT: "Textile Based Water Pollution-Information Study"

PROJECT SITE: Raleigh, North Carolina **DATE AWARDED:** May 9, 1969

FEDERAL GRANT: $10,410 **TOTAL EST. PROJ. COST:** $12,638

PROJECT NUMBER: 12090 ECU **PPBS NO.** 1209

DESCRIPTION OF PROJECT:

Collection of, abstracting and indexing all available literature dealing with water pollution from textile based sources, and preparation and storage of this information into the Water Resources Scientific Information System. Correlate information between the Water Resources Scientific Information Center, USDI, the M.I.T. Textile Center and the Shirley Institute thesauri.

Project Duration: 8 months

INQUIRIES: *Contact the* Industrial Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
633 Indiana Ave. N.W.
Washington, D. C. 20242

HGK/4/69

INFORMATION SHEET

Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Class I Grant, under Section 5 of the Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR: (Name and Address)
Department of Textiles
School of IM & IS
Clemson University
Clemson, S.C. 29631

PROJECT DIRECTOR: (Name and Address)
Dr. John J. Porter

TITLE OF PROJECT: Survey of the State of the Art of Textile Waste Treatment

PROJECT SITE: Clemson University

PROGRAM (PROJECT) NUMBER: 12090 ECS

DATE OFFERED: June 20, 1969

DATE ACCEPTED (AWARDED): June 24, 1969

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: July 1, 1969 Thru: June 30, 1970	$31,675	$30,007

DESCRIPTION OF PROJECT: The study will include characterization of the liquid wastes from the major manufacturing processes as to composition and quantity per unit of production, identify successful and unsuccessful treatment processes and disposal practices presently in use, and suggest alternatives for least satisfactory practices. The study will be directed towards identifying areas most in need of research and those areas where research effort is most likely to yield beneficial results.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

ELD
6/69

INFORMATION SHEET

Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Research Grant, under Section 5, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR: (Name and Address) Department of Textiles; School of IM&TS; Clemson, University; Clemson, South Carolina 29631

PROJECT DIRECTOR: (Name and Address) Dr. John J. Porter, Department of Textiles
Clemson University, Clemson, South Carolina 29631

TITLE OF PROJECT: A Study of the Photochemical Degradation of Commercial Dyes

PROJECT SITE: Clemson University; Clemson, South Carolina

PROGRAM (PROJECT) NUMBER: 12090 EOX

DATE OFFERED: July 22, 1969

DATE ACCEPTED (AWARDED): August 20, 1969

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: 8/1/69 Thru: 7/31/70	$34,040	$31,539

DESCRIPTION OF PROJECT:

The objectives of this 12 month research project are to define and characterize the products of decomposition resulting from ultraviolet radiation of selected commercial textile dyes. The characterization will include distinquishing between photochemical and hydrolytically produced decomposition products.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

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7/69

INFORMATION SHEET

September 30, 1969
Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Research Grant, under Section 5, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR: (Name and Address) Textile Chemistry, David Clark Laboratories, North Carolina State University, Raleigh, North Carolina 27607

PROJECT DIRECTOR: (Name and Address) Carl E. Bryan
Textile Chemistry Department, North Carolina State University,,
Raleigh, North Carolina 27607

TITLE OF PROJECT: "Water Pollution Reduction Through Recovery of Desizing Wastes"

PROJECT SITE: North Carolina State University, Raleigh, North Carolina

PROGRAM (PROJECT) NUMBER: 12090 EOE

DATE OFFERED: September 17, 1969

DATE ACCEPTED (AWARDED): Oct. 6, 1969

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: Thru:	$39,688	$ 35,833

DESCRIPTION OF PROJECT:

The objectives of the twelve month research program include the following:

1. (1) To investigate processes for the recovery of desizing wastes in solid or concentrated form, suitable for final disposal and to investigate processes for the recovery in a reusable form. The wastes studied will be those from fabrics sized with carboxymethy cellulose (CMC), polyvinyl alcohol (PVA), and starch.
2. (2) To obtain more complete data on biodegradation of synthetic warp sizes, CMC, PVA.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act(Clean Water Restoration Act).

GRANTEE: Fiber Industries, Inc.
Box 10038
Charlotte, North Carolina 28201

TITLE OF PROJECT: Reuse of Plant Effluent and Cooling Water Blowdown as Process Water.

PROJECT SITE: Shelby, North Carolina

DATE AWARDED: April 4, 1968

FEDERAL GRANT: $350,000

TOTAL EST. PROJ. COST: $500,000

PROJECT NUMBER: WPRD 100-01-68
12090 EUX

PPBS NO. 1209

DESCRIPTION OF PROJECT: An existing facility provides treatment for the combined sanitary and equalized chemical process waste waters from a synthetic fiber manufacturing plant. Treatment facilities consist of extended activated sludge aeration basins, clarifier, polishing ponds, an aerobic sludge digestion basin, and a sludge holding pond.

The project will evaluate treatability of this waste in a plastic media trickling filter, feasibility of algae removal from the polishing pond effluent by use of microscreen filters, feasibility of BOD, COD, color, odor and taste reduction in the final effluent by use of powdered carbon for the purpose of ultimate reuse of the effluent as process makeup water, and chromate reduction of cooling tower blowdown to permit treatment in the waste treatment plant.

INQUIRIES: ***Contact the*** Industrial Pollution Control Branch, DED
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
~~633 Indiana Ave. N.W.~~
Washington, D. C. 20242

ELD 7/68

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: American Enka Corporation
Enka, North Carolina

TITLE OF PROJECT: "Zinc Precipitation and Recovery Plant"

PROJECT SITE: Enka, North Carolina

DATE AWARDED: May 24, 1968

FEDERAL GRANT: $282,700

TOTAL EST. PROJ. COST: $980,417

PROJECT NUMBER: WPRD-216-01-(R-1)-68
12090 ESG

PPBS NO. 1209

DESCRIPTION OF PROJECT: The objectives of this 20 month full scale demonstration project to remove soluble zinc emitted from spin bath operations in the manufacture of viscose rayon are as follows:

1. To direct waste streams containing significant amounts of zinc into the existing 200 gpm chemical precipitation and recovery system.
2. Improve the quality of both the zinc sludge produced in the recovery system and the final effluent to enable their reuse in the manufacturing process.
3. Optimize the system.
4. Utilize the technology developed in the design, construction and operation of a new zinc precipitation and recovery system.

INQUIRIES: *Contact the* Industrial Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
~~633 Indiana Ave. N.W.~~
Washington, D. C. 20242

8/68

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: C.H. Masland & Sons
Carlisle, Pennsylvania 17013

TITLE OF PROJECT: Demonstration of a New Process for the Treatment of Textile Dyeing and Finishing Waste

PROJECT SITE: Wakefield, Rhode Island **DATE AWARDED:** April 15, 1969

FEDERAL GRANT: $27,615 **TOTAL EST. PROJ. COST:** $39,450

PROJECT NUMBER: 12090 DWM **PPBS NO.** 1209

DESCRIPTION OF PROJECT:

The applicant proposes to construct a pilot facility to treat the full flow (50,000 gpd) of process and primary treated sanitary wastes from their Wakefield, Rhode Island plant. The principle operations of the plant are wool and synthetic fiber dyeing and spinning of fibers into yarn. The Pilot Facility will employ a process developed by the Fram Corporation (patent pending) for the biological regeneration of an activated carbon absorption and filtration system. In operation, the wastewaters are pumped down-flow through several granular carbon columns in series during the ten hour operating day. During the remainder of the day an activated sludge mixed liquor is pumped upflow through the columns.

The plan of operation provides for (a) effluent profile analysis (b) design, construction, operation, testing, and evaluation of the pilot facility (c) development of design criteria for a 1 to 1.5 mgd plant and (d) preparation of reports.

INQUIRIES: *Contact the* Industrial Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
[redacted]
Washington, D. C. 20242

EID 3/69

INFORMATION SHEET

September 25, 1969
Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Demonstration Grant, under Section 6(b), Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR: (Name and Address)
Palisades Industries, Inc.
2 Columbia Street
Peace Dale, Rhode Island 02883

PROJECT DIRECTOR: (Name and Address)
Calvin P.C. Poon
Department of Civil Engineering
University of Rhode Island
Kingston, Rhode Island

TITLE OF PROJECT: Demonstration of a New Process for the Treatment of High Pollutant Concentration Textile and Finishing Wastes

PROJECT SITE: Peace Dale, Rhode Island

PROGRAM (PROJECT) NUMBER:
12090 EQO

DATE OFFERED: September 15, 1969

DATE ACCEPTED (AWARDED): Oct. 3, 1969

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: 9/1/69 Thru: 1/1/71	$ 143,750	$ 64,687

DESCRIPTION OF PROJECT:

To demonstrate the effectiveness of a pilot scale treatment system which would adequately treat a 50,000 gpd waste flow from a textile dye mill. The system consists of an aerated equalization basin, a anaerobic activated carbon unit, a aerobic activated carbon unit and a activated sludge regeneration unit.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior

INFORMATION SHEET

November 13, 1969
Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Demonstration, under Section 6B, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR:
(Name and Address)
Holliston Mills, Inc.
111 Lenox Street
Norwood, Mass. 02060

PROJECT DIRECTOR:
(Name and Address)
J.L. Young Jr.
P.O. Box 478
Kingsport, Tenn. 37662

TITLE OF PROJECT: Treatment of Cotton Textile Waste by Enzymes and High Rate Trickling Filter System

PROJECT SITE: New Canton, Tennessee
P.O. Box 478; Kingsport, Tenn. 37662

PROGRAM (PROJECT) NUMBER: 12090 EGW

DATE OFFERED: OCT 31 1969

DATE ACCEPTED (AWARDED): Dec. 12, 1969

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: 36 months Thru:	$ 285,372	$144,741

DESCRIPTION OF PROJECT:

The industry concerned purchases cotton greige goods and produces high grade book bindings. The manufacturing processes which produce a waste flow are desizing, caustic extraction, bleaching, dyeing, and sizing. The applicant proposes to substitute an enzyme desizing chemical in the desizing process which will reduce the pH and BOD load to the waste stream. A treatment system employing a primary clarifier, high rate trickling filter with plastic media and a secondary clarifier will be used to treat the waste flow. The sludge from the treatment system will then be subjected to an enzyme reaction which will render it amenable to further biological oxidation.

The effectiveness of the manufacturing process change, and the operating characteristics and efficiency of the trickling filter system and sludge handling system will be evaluated.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: Oregon State University
Corvallis, Oregon 97331

TITLE OF PROJECT: "Influence of Log Rafting on Water Quality"

PROJECT SITE: Corvallis, Oregon and Vicinity

DATE AWARDED: May 15, 1969

TOTAL EST. PROJ. COST: $21,639-2nd yr.

FEDERAL GRANT: $20,557

PPBS NO. 1210

PROJECT NUMBER: 12100 EBG
(Formerly WP-1320)

DESCRIPTION OF PROJECT:

The major objectives of this project are to:

Determine the quantity and character of substances leached from logs while floating in water; determine the rate and extent at which leached substances are degraded biologically; determine debris under and in the vicinity of log rafting and storage areas; evaluate the rate and extent of aerobic and anerobic biodegradation of the benthol deposits; and determine the extent of log raft storage at selected locations in the Pacific Northwest and using data obtained from the above experiments evaluate the potential contribution of raft storage to water pollution in those areas.

INQUIRIES: *Contact the* Industrial Pollution Control Branch-DAST
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
[redacted]
Washington, D. C. 20242

GRW 4/69

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act(Clean Water Restoration Act).

GRANTEE: Klamath Plywood Corporation
P. O. Box 1239
Klamath Falls, Oregon 97601

TITLE OF PROJECT:

"Aerobic Secondary Treatment of Plywood Glue Wastes"

PROJECT SITE: Klamath Falls, Oregon ***DATE AWARDED:*** APR 19 1968

FEDERAL GRANT: $42,028 ***TOTAL EST. PROJ. COST:*** $65,040

PROJECT NUMBER: WPRD 174-01-(R1)-68 ***PPBS NO.*** 1210

DESCRIPTION OF PROJECT:

The project objectives of this grant are to design, construct, operate and evaluate an extended aeration, activated sludge lagoon treatment plant on urea-formaldehyde glue wastes in order to provide data for others to utilize in efforts to abate water pollution.

INQUIRIES: *Contact the* Industrial Pollution Control Branch, DFD
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
[redacted]
Washington, D. C. 20242

8/68

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec.5 , Federal Water Pollution Control Act(Clean Water Restoration Act).

GRANTEE: Research Foundation, American Water Works Association.

TITLE OF PROJECT: Disposal of Wastes from Water Treatment Plants.

PROJECT SITE: New York, N. Y.

DATE AWARDED: July 25, 1968

FEDERAL GRANT: $46,305

TOTAL EST. PROJ. COST: $53,250

PROJECT NUMBER: WP-1535-01-69
12120 ERC

PPBS NO. 1212

DESCRIPTION OF PROJECT:

Preparation of a "State of the Arts" report on current practices and costs of disposing of sludges generated by water treatment plants. The results of this 12 month project will be used to develop a program for research and development needs for these significant problems of solids addition to watercourses.

INQUIRIES: ***Contact the*** Industrial Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
[redacted]
Washington, D. C. 20242

8/68

INFORMATION SHEET

11/12/69
Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Class I Grant, under Section 5 Research, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR: City of Gainesville, Florida
(Name and Address)

PROJECT DIRECTOR:
(Name and Address)
Mr. John R. Kelly, Director
Public Utilities
P. O. Box 490
Gainesville, Florida 32601

TITLE OF PROJECT: "Develop uses in water and waste treatment of $MgCO_3$ recovered from lime soda softening sludges"

PROJECT SITE: Gainesville, Florida

PROGRAM (PROJECT) NUMBER: 12120 ESW

DATE OFFERED: 11/12/69

DATE ACCEPTED (AWARDED):

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: 11/1/69 Thru: 10/31/70	$ 27,554	$ 16,890

DESCRIPTION OF PROJECT:

The principal investigator has a modified process for the recovery of MgO from brucite or dolomite to the separation and essentially quantitative recovery of the $Mg(OH)2$ present in lime-soda softening sludges as very pure (99.7%) $MgCO_3$. This new process has been successfully tested on a pilot plant scale at Dayton, Ohio, for the past year and plans are now being made for the full-scale recovery of $MgCO_3$ from the sludge produced by both of that city's softening plants.

Another improvement of the process makes it possible for each of the several cities and industrial plants softening hard surface waters containing clay turbidity to employ both lime recalcination and magnesium recovery. This will substantially reduce treatment costs and also substantially eliminate a major water pollution problem. Application of $MgCO_3$ as a coagulant to be studied include the following:

1. the removal of turbidity and organic color from soft surface waters.
2. from hard or alkaline surface or well waters.
3. flocculation or sewage and for many types of industrial wastes.
4. with synthetic organic anionic and cationic polymers in (1), (2) and (3) above.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 5, Federal Water Pollution Control Act(Clean Water Restoration Act).

GRANTEE: Rensselaer Polytechnic Institute
Research Division
Troy, New York 12181

TITLE OF PROJECT: "Removal of Syndets and Reclamation of Laundry Wastes"

PROJECT SITE: Troy, New York

DATE AWARDED: January 24, 1969

FEDERAL GRANT: $25,055

TOTAL EST. PROJ. COST: $53,090

PROJECT NUMBER: 12120 D0D

PPBS NO. 1212

DESCRIPTION OF PROJECT:

To optimize and evaluate the best process or combination of processes attainable for the treatment and recovery of laundromat wasterwaters. Two commercially available treatment systems for laundromat wastewaters are to be used in the optimization and evaluation project. The needs required to produce waste effluents suitable for discharge to New York State receiving waters, and the treatment requirements to produce reusable water for laundromats will be determined and demonstrated.

INQUIRIES: *Contact the* Industrial Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
[redacted]
Washington, D. C. 20242

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 5, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: University of Cincinnati
Professor J. David Eye

TITLE OF PROJECT: Treatment of Total Wastes from a Sole Leather Tannery

PROJECT SITE: Marlinton, West Virginia **DATE AWARDED:** May 1, 1968

FEDERAL GRANT: $29,325 - 2nd year **TOTAL EST. PROJ. COST:** $166,000

PROJECT NUMBER: WPD 185-02-68 **PPBS NO.** 1212

DESCRIPTION OF PROJECT: The basic objective of this project is the complete treatment of the total wastes stemming from a large sole leather tannery. During the first year the beamhouse waste fractions were effectively separated and pretreated. During the second year of this grant the pretreated beamhouse waste will be blended with spent tan liquor and then treated in a series of stratified anaerobic-aerobic lagoons.

INQUIRIES: Contact the Industrial Pollution Control Branch, DED
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
[redacted]
Washington, D. C. 20242

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INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 5, Federal Water Pollution Control Act(Clean Water Restoration Act).

GRANTEE: University of Virginia
Department of Civil Engineering
Charlottesville, Virginia 22903

TITLE OF PROJECT: An Anaerobic-Aerobic Lagoons for Treating Vegetable Tannins

PROJECT SITE: Luray, Virginia	**DATE AWARDED:** January 18, 1969 [redacted]
FEDERAL GRANT: $17,801	**TOTAL EST. PROJ. COST:** $68,500
PROJECT NUMBER: 12120 DIK	**PPBS NO.** 1212

DESCRIPTION OF PROJECT: The objective of this project is to demonstrate that the wastes from the bating, soaking, tanning, and bleaching processes in a vegetable tannery can be effectively treated by means of an anaerobic-aerobic lagoon. The wastes are to be equalized and combined prior to entering the lagoon. The lagoon is to be operated under varying conditions of aeration and BOD loading in order to determine optimum design parameters.

INQUIRIES: **Contact the** Industrial Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
[redacted]
Washington, D. C. 20242

GRW
1/69

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: Caldwell Lace Leather Company

TITLE OF PROJECT: "Complete Treatment of Tannery Industrial Waste for Chrome Tanning, Alum Tanning, and Vegetable Tanning"

PROJECT SITE: Auburn, Kentucky

DATE AWARDED: December, 1966

FEDERAL GRANT: $46,340

TOTAL EST. PROJ. COST: $68,200

PROJECT NUMBER: WPRD 25-01-67
12120 EFM

PPBS NO. 1212

DESCRIPTION OF PROJECT: No completely satisfactory method has been devised for treating tannery industrial waste. Since tanneries use large volumes of water, containing organic and inorganic matter, suitable treatment methods must be found.

The objectives of the project are to demonstrate the feasibility of completely treating tannery waste from the only plant in U.S. that tans all three types of leather tannages - Chrome, Vegetable and Alum - and to obtain basic data to design full-scale treatment plants usable for any tannery.

The basic plan is to develop methods to pre-treat the three present leather tannages, to combine their streams, and to completely treat tannery industrial waste. The high alkaline content of beam house waste will be neutralized with high acid made up of various tannages. The organic solids will be reduced in an anaerobic-aerobic lagoon.

INQUIRIES: *Contact the* Industrial Pollution Control Branch, DED
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
[redacted]
Washington, D. C. 20242

GW 1/67

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act(Clean Water Restoration Act).

GRANTEE: A.C. Lawrence Leather Company, Division of Swift &
Company, 10-18 Sawyer Street
Peabody, Massachusetts

TITLE OF PROJECT: "Wastewater Treatment Pilot Plant Investigation, Mixed Chrome Tannery Wastewater"

PROJECT SITE: South Paris, Maine

DATE AWARDED: 8/30/67

FEDERAL GRANT: $87,215

TOTAL EST. PROJ. COST: $124,593

PROJECT NUMBER: WPRD-133-01-68

PPBS NO. 1212

DESCRIPTION OF PROJECT: The objectives of the project are as follows:

1) To demonstrate on a pilot plant scale the primary and secondary treatment, by the activated sludge process, of mixed chrome tannery wastewaters and sanitary sewage.
2) To demonstrate the pre-treatment of the tannery wastewater by carbonation with flue-gas and up-flow sedimentation in order to remove excess calcium, chromium, and sulfides.
3) To demonstrate the benefits of mixing municipal sanitary sewage with tannery wastewaters to provide the biological nutrients lacking in tannery wastes.
4) To determine design criteria for a scale up to a full scale demonstration plant and to provide a basis for estimating the costs of construction and operation of a full scale plant.
5) To determine optimum methods of dewatering sludge, with primary emphasis on concentration by centrifugation, with aim being to dewater sufficiently to dispose of solids as sanitary land fill.

INQUIRIES: *Contact the* Industrial Pollution Control Branch, DED
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
[redacted].
Washington, D. C. 20242

GRW 10/68

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: S. B. Foot Tanning Company
Red Wing, Minnesota

TITLE OF PROJECT: "Aerobic Biological Treatment, Sludge Dewatering and Disposal and Effluent Reuse for a Side Leather Tannery"

PROJECT SITE: Red Wing, Minnesota

DATE AWARDED: May 15, 1968

FEDERAL GRANT: $475,000

TOTAL EST. PROJ. COST: $2,046,268

PROJECT NUMBER. WPRD 232
12120 DSG

PPBS NO. 1212

DESCRIPTION OF PROJECT:

The four year project will provide a full scale demonstration and investigation of primary sedimentation, biological secondary treatment utilizing aerated lagoons, and primary and secondary sludge dewatering and disposal by means of pressure filtration and incineration. The system will treat the total waste flow of 2.1 MGD from the side leather tannery. In addition an evaluation will be conducted to determine the influence of final treatment plant effluent reuse on hide processing and quality of the finished product by reusing it in the "limepaddle" and "wash soak" tanning operations.

INQUIRIES: *Contact the* INDUSTRIAL POLLUTION CONTROL BRANCH, DED
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
[redacted]
Washington, D. C. 20242

8/68

GPO 887-996

INFORMATION SHEET

Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a **Research Grant**, under Section **5** Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR: (Name and Address)
Oregon State University
Corvallis, Oregon 97331

PROJECT DIRECTOR: (Name and Address)
James T. Krygier
Forest Hydrology Section (Forest Science)
Forest Research Laboratory
Corvallis, Oregon 97331

TITLE OF PROJECT: **"Studies on Effects of Watershed Practices on Streams"**

PROJECT SITE:
Forest Research Laboratory
Oregon State University
Corvallis, Oregon

PROGRAM (PROJECT) NUMBER: **13010 EGA**
EX(WP-00423-08)

DATE OFFERED:

DATE ACCEPTED (AWARDED):

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: 7/1/69 Thru: 6/30/70	$ 50,575	$ 37,552

DESCRIPTION OF PROJECT: **The primary aims of this project have been to establish the magnitude of environmental impacts of logging on water temperature in terms of the regime of temperature; to predict water temperature changes by methods appropriate to engineering; to determine the downstream effect; and establish cover requirements to maintain temperature at given levels.**

FWPCA Project Officer: Dr. H. Kirk Willard, FWPCA, Pacific Northwest Water Laboratory
200 South 35th Street, Corvallis, Oregon 97330

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

6-20-69
Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Research Grant, under Section 5, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR: (Name and Address)
North Carolina State University
Raleigh, North Carolina 27607

PROJECT DIRECTOR: (Name and Address)
David H. Howells
North Carolina State University
Raleigh, North Carolina 27607

TITLE OF PROJECT: "Role of Animal Wastes in Agricultural Land Runoff"

PROJECT SITE: Raleigh, North Carolina

PROGRAM (PROJECT) NUMBER: 13020DGX

DATE OFFERED:

DATE ACCEPTED (AWARDED):

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: 7/1/69 Thru: 6/30/70	$ 46,434	$ 41,941

DESCRIPTION OF PROJECT:
To investigate the actual and potential importance of animal wastes in agricultural land runoff with respect to water quality management. This includes the measurement of rainfall, runoff, bacterial densities, degradable organics, and nutrients carried to streams by agricultural land runoff from areas supporting the concentrated growing of swine, poultry, dairy and non-dairy livestock under conditions of dry and wet weather flows. Surveys will be made of a representative sample of farm operations to determine amounts and strengths of wastes produced, disposition, suitability of present means of disposal, discharges to ground and surface waters, identification of researchable problem areas, and assessment of importance of animal wastes as a factor in water pollution control. Where significant amounts of animal wastes are reaching water courses, an effort will be made to identify those conditions contributing to this type of pollution, to suggest corrective measures, and to relate pollutants to animal populations as a basis for estimating the effect of agricultural land runoff on water quality under similar conditions elsewhere.

Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 202

INFORMATION SHEET

Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Class I Grant, under Section 5, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR: (Name and Address)
South Dakota State University
Brookings, South Dakota 57006

PROJECT DIRECTOR: (Name and Address)
James N. Dornbush
Civil Engineering Department
Brookings, South Dakota 57006

TITLE OF PROJECT:

"Quantification of Pollutants in Agricultural Runoff"

PROJECT SITE: Brookings, South Dakota

PROGRAM (PROJECT) NUMBER:

13020 DTV, Rev.

DATE OFFERED:

DATE ACCEPTED (AWARDED):

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: 8/1/69 Thru: 7/31/70	$ 58,330	$ 55,330

DESCRIPTION OF PROJECT:

The objectives of this project are to: (1) quantify the pollutional constituents in agricultural surface runoff and express them as contributions per unit area or per unit runoff, (2) relate unit pollutant contributions to soil types, land uses and management practices, and climatological factors, and (3) relate the portion of pollution constituents associated with both dissolved and suspended solids.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

INFORMATION SHEET

ccA 6-24-69
Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Research Grant, under Section 5, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR: (Name and Address)
Alabama Agricultural and Mechanical College
Normal, Alabama 35762

PROJECT DIRECTOR: (Name and Address)
Robert R. Bradford
Alabama Agricultural and Mechanical College
Normal, Alabama 35762

TITLE OF PROJECT: "Nutrient Inputs to Streams from Fertilizers"

PROJECT SITE: Normal, Alabama

PROGRAM (PROJECT) NUMBER: 13020DWH Revised

DATE OFFERED:

DATE ACCEPTED (AWARDED):

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: 7-1-69 Thru: 6-30-70	$ 37,666	$ 35,783

DESCRIPTION OF PROJECT:

While it is known that Agriculture and its related practices probably contribute to water pollution or to a decrease in "water quality" the magnitude of this contribution and possible corrective measures, in most cases, have not been well defined.

This project aims to provide information with respect to nutrient inputs of nitrogen and phosphorus to intermittent streams which are derived from fertilizers applied to different row crops. Since water carried by intermittent streams feed into major waterways, data obtained may be used to derive figures for nutrient inputs from row crops over the entire watershed area.

INQUIRIES: **Contact** Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: BUREAU OF RECLAMATION

TITLE OF PROJECT: Monitoring Herbicide Residues in Irrigation Systems

PROJECT SITE: Columbia Basin, Wash.

DATE AWARDED:

FEDERAL GRANT: $20,000

TOTAL EST. PROJ. COST: $42,000

PROJECT NUMBER: 13030 DNR

PPBS NO. 1303

DESCRIPTION OF PROJECT:

The objectives of this project concern the determination of quantities, fate, and persistence of herbicides in irrigation systems for the purpose of ditch-bank and submersed weed control. Amounts of herbicide getting into irrigation waters, remaining in the water as it is conducted to cropland, returning to drainage systems, and eventually returning to the mainstream will be studied. Determination's will also be made of amounts of herbicide absorbed by ditch bottom soil, aquatic vegetation, agricultural soils, and crop plants. Montoring of major herbicides will provide significant data to support establishment of sound water quality criteria for use of herbicides in irrigation systems.

INQUIRIES: Contact the

Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
633 Indiana Ave. N.W.
Washington, D. C.

INFORMATION SHEET--

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: Grand Valley Water Purification Project, Inc.

TITLE OF PROJECT: Grand Valley Salinity Control Demonstration Project

PROJECT SITE: Grand Junction, Colo.	**DATE AWARDED:**
FEDERAL GRANT: 350,175	**TOTAL EST. PROJ. COST:** $536,750
PROJECT NUMBER: 13030 DOA	**PPBS NO.** 1103

DESCRIPTION OF PROJECT:

In three selected study areas, irrigation canalys and other water conveyance channels will be lined to control the major source of recharge to the near-surface aquifers; thereby minimizing the quantity of flow through mineral yielding geological formations and reducing the radient which forces saline water into the Colorado River. Detailed field observations and measurements will be made to evaluate the effectiveness of lining in preventing seepage, the reduction in discharge to local surface streams, and the improvement in mineral quality.

INQUIRIES: *Contact the*

Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
633 Indiana Ave. N.W.
Washington, D. C. 20242

INFORMATION SHEET

Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Contract, under Section 5 Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR: (Name and Address) Bureau of Reclamation
Denver, Colorado

PROJECT DIRECTOR: (Name and Address) Chief of Engineers
Bureau of Reclamation
Denver, Colorado

TITLE OF PROJECT: "Monitoring Herbicide Residues in Irrigation Systems"

PROJECT SITE: Denver, Colorado
Columbia Basin, Washington

PROGRAM (PROJECT) NUMBER: 13030 DRQ

DATE OFFERED:

DATE ACCEPTED (AWARDED):

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: 7/1/69 Thru: 6/30/70	$ $70,000	$ 70,000

DESCRIPTION OF PROJECT:

The purpose of this cooperative study is to find out how much herbicide gets into irrigation water as a result of routine herbicide applications made on irrigation systems to control aquatic and ditchbank weeds and to determine herbicide dissipation rate as the treated water moves downstream. The quantity of herbicide found will be valuable information and especially useful in petitions prepared for registration of herbicides for this specific use.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

INFORMATION SHEET

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Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Contract, under Section 6(b), Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR: (Name and Address)
Battelle Northwest
P.O. Box 999
Richland, Washington 99352

PROJECT DIRECTOR: (Name and Address)
Dr. Alan Shuckrow
Battelle Northwest
P.O. Box 999
Richland, Washington 99352

TITLE OF PROJECT: "Research & Demonstration Program to Evaluate the Feasibility of Polyelectrolyte Treatment for Sediment Removal from Irrigation Return Flows in the Yakima Valley"

PROJECT SITE: Richland, Washington

PROGRAM (PROJECT) NUMBER: 13030EGF

DATE OFFERED:

DATE ACCEPTED (AWARDED):

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: 10/1/69 Thru: 4/30/41	$ 48,570	$ 48,570

DESCRIPTION OF PROJECT:

The objective of the proposed research is to establish the feasibility of sediment removal from irrigation return flows by means of polyelectrolyte treatment and silting basins. A secondary goal is to determine the quantities of nutrients and pesticides carried by these sediments and the reduction in nutrients and pesticides which can be achieved by simple polyelectrolyte-sedimentation treatment.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

INFORMATION SHEET--

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act(Clean Water Restoration Act).

GRANTEE:
Cornell University
Ithaca, New York 14850

TITLE OF PROJECT: Agricultural Contributions to Nutrients in Water

PROJECT SITE: Ithaca, New York

DATE AWARDED:

FEDERAL GRANT: $75,773

TOTAL EST. PROJ. COST: $147,386

PROJECT NUMBER: 13030 DPB

PPBS NO. 1302

DESCRIPTION OF PROJECT:

The objectives of the project are to (a) develop working approximations of parameters necessary for estimating the contributions of nitrogen and phosphorus from agriculcultural land under selected major land use systems, and (b) to permit identification of farming practices by means of which such contributions may be minimized.

INQUIRIES: Contact the Agricultural and Marine Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
633 Indiana Ave. N.W.
Washington, D. C. 20242

INFORMATION SHEET

Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Inter-agency Agreement, under Section 5, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR: (Name and Address) Bureau of Reclamation
U.S. Department of the Interior
Washington, D.C.

PROJECT DIRECTOR: (Name and Address) Chief Engineer
Bureau of Reclamation
Denver, Colorado

TITLE OF PROJECT: "Prediction of Mineral Quality of Return Flow Water from Irrigated Land"

PROJECT SITE: Vernal, Utah

PROGRAM (PROJECT) NUMBER: 13030EII

DATE OFFERED:

DATE ACCEPTED (AWARDED):

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: 7/1/69 Thru: 6-30-70	$ 150,000	$150,000

DESCRIPTION OF PROJECT:

The objective of this program is to verify an already developed and available prediction model for a well defined irrigated area. If the model is successful, the study will be extended to other areas, each of which typifies a different combination of soil, climatic, geologic and hydrologic conditions found in broad areas of irrigable land throughout the Western States. In each study area the program will seek to (1) fully characterize the aforementioned conditions, (2) employ the data collected and the prediction models to determine the theoretical quality of return flows, (3) measure the actual quality of return flows, (4) compare the results of the prediction models with the measurements of actual quality, and (5) identify and correct any deficiencies in the prediction models evidenced by the comparative analyses. The intended ultimate product of the program is a set of verified techniques that can be used in almost all irrigable areas to predict the quality of return flows from new irrigation projects. It also is intended that these techniques will have use in determining the quality of return flows from existing irrigated areas.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

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Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Demonstration Grant under Section 5, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR: (Name and Address) State of California
Department of Water Resources
Sacramento, California

PROJECT DIRECTOR: (Name and Address) Louis A. Beck
Department of Water Resources
P. O. Box 2385
Fresno, California 93723

TITLE OF PROJECT: "Nutrient Removal From Agricultural Waste Waters"

PROJECT SITE: Fresno, California (Firebaugh)

PROGRAM (PROJECT) NUMBER: 13030ELY

DATE OFFERED:

DATE ACCEPTED (AWARDED):

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: 6-1-69 Thru: 6-1-70	$105,310	$64,000

DESCRIPTION OF PROJECT:

The objective of this project is to determine the practicability of using an algal production and harvesting treatment method to remove nutrients from agricultural drainage waters and to determine the design criteria and the costs of construction, operation and maintenance of such a method.

Several algal production units are being operated to determine the optimum physical parameter which will grow a maximum culture of algae. The effects of nutrient additions is being investigated. Pilot scale separation facilities are being operated to determine the most practical method of algae harvesting. The pilot scale facilities are being operated to determine the seasonal effects.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior

INFORMATION SHEET

1-14-70
Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Grant, under Section 5, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR: (Name and Address)
Center for Water Resources Research
Desert Research Institute
Reno, Nevada 89507

PROJECT DIRECTOR: (Name and Address)
Mr. Alan E. Peckham
Desert Research Institute
4624 Maryland Parkway, South
Las Vegas, Nevada 89507

TITLE OF PROJECT: "Effect of Water Management on Quality of Ground Water & Surface Recharge"

PROJECT SITE: Las Vegas Valley- Las Vegas Wash

PROGRAM (PROJECT) NUMBER: 13030 E0B

DATE OFFERED:

DATE ACCEPTED (AWARDED):

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: 12/1/69 Thru: 11/30/70	$ 140,290	$127,470

DESCRIPTION OF PROJECT:

1) To identify the effects on water quality of current water and waste water management. 2) To develop a comprehensive set of alternative solutions to the water quality problems which now exist as a result of the discharge of poor quality ground water in Las Vegas Wash and elsewhere in the lower portions of the Las Vegas Valley. 3) To demonstrate which of the possible solutions can most effectively be implemented to correct the pollutional aspects of Las Vegas Valley ground water and aid in general environmental quality improvement. 4) To demonstrate how waste water can be managed in such a manner as to improve the quality of the water which discharges into Lake Mead. 5) To develop a model of the system utilizing information developed from the Bureau of Reclamation project 13030 EII.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

INFORMATION SHEET

COB 11-7-69
Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Grant, under Section 5, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR: (Name and Address)
Utah State University
Logan, Utah 84321

PROJECT DIRECTOR: (Name and Address)
Dr. Larry G. King
Utah State University
Logan, Utah 84321

TITLE OF PROJECT: "Quality of Irrigation Return Flow"

PROJECT SITE: Logan, Utah; Vernal, Utah

PROGRAM (PROJECT) NUMBER: 13030 FDJ

DATE OFFERED:

DATE ACCEPTED (AWARDED):

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: 10/1/69 **Thru:** 9-30-70	$229,120	$208,120

DESCRIPTION OF PROJECT:

The primary objective is to conduct research on the problems that affect the quality of irrigation return flow. This is to be accomplished initially by studies in four areas or sub-projects:

(1) Precipitation mechanisms in soils as they affect water quality. This phase will be concerned with the changes in the quality of water, as it moves through soils, as a result of precipitation of calcium carbonate. (Detailed proposal is attached. This detail can be prepared for the other areas.)

(2) To develop information for predicting the changes in the salinity content of soil and drainage water resulting in changes in the quality of irrigation water and in irrigation management.

(3) Managing water in the soil-plant matrix to control the quality and quantity of return flow.

(4) Contamination of surface and drainage waters with soil and foliar herbicides. There will be special emphasis on heavy rates used on canal banks, drains, waterways, etc.

It is anticipated that as the specific segments or sub-projects are completed the studies will be expanded to include the broad aspects of water management. This would include such things as consolidation of irrigation companies for water quality control. It would also encompass the economics of water quality improvement and protection.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act(Clean Water Restoration Act).

GRANTEE:
Kansas State University
Manhattan, Kansas

TITLE OF PROJECT: "Demonstration and Development of Facilities for the Treatment and Ultimate Disposal of Cattle Feedlot Wastes"

PROJECT SITE: Pratt, Kansas

DATE AWARDED:

FEDERAL GRANT: $136,608

TOTAL EST. PROJ. COST: $201,713

PROJECT NUMBER: 13040DAT, Revised

PPBS NO. 1304

DESCRIPTION OF PROJECT:

(1) Characterize cattle manure that is removed from the surface of feedlots under conditions that are typical to the commercial cattle feeding industry.

(2) Characterize stormwater runoff as it flows from lots and while it is held in an anaerobic storage lagoon.

(3) Determine the effectiveness, design criteria, engineering and agronomic problems, and related costs of a pollution control system involving land disposal of solid manure and stormwater runoff from large, concentrated beef cattle feeding operations.

INQUIRIES: *Contact the* Agricultural and Marine Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior

Washington, D. C. 20242

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: New York State College of Agriculture
Cornell University
Ithaca, New York 14850

TITLE OF PROJECT: "Animal Waste Management - Demonstration of Feasible Handling and Treatment Processes"

PROJECT SITE: Ithaca, N. Y.

DATE AWARDED:

FEDERAL GRANT: $194,095

TOTAL EST. PROJ. COST: $399,996

PROJECT NUMBER: 13040 DDG

PPBS NO. 1304

DESCRIPTION OF PROJECT:

The objectives of this project are to design, construct, and demonstrate the applicability of a treatment system, based upon laboratory results, for the removal of organic matter, nitrogen, phosphorous, and color from dairy cattle and poultry wastes.

INQUIRIES: **Contact the** Agricultural and Marine Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
633 Indiana Ave. N.W.
Washington, D. C. 20242

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: Texas Technological College
Water Resources Center
P.O. Box 4630
Lubbock, Texas 79409

TITLE OF PROJECT: Characteristics of Wastes from Southwestern Cattle Feedlots

PROJECT SITE: Lubbock, Texas

DATE AWARDED:

FEDERAL GRANT: $74,955

TOTAL EST. PROJ. COST: $96,660

PROJECT NUMBER: 13040 DEM, Rev.

PPBS NO. 1304

DESCRIPTION OF PROJECT:

The objectives of this project are to determine the characteristics of wastes southwestern cattle feedlots, to evaluate waste control and removal techniques, and to develop criteria for the desgin and operation feedlots to minimize water pollution. The project will conduct complete analyses of wastes produced by feeder cattle raised under specific feeding and management regimes and various climatic conditions, correlate data obtained, and from these data develop guidelines for construction and operation of cattle feedlots from the standpoint of minimizing water pollution.

INQUIRIES: *Contact the* Agricultural and Marine Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior

Washington, D. C. 20242

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: Washington State University
Pullman, Washington 99163

TITLE OF PROJECT: " Anaerobic-Aerobic Lagoon Treatment of Dairy Manure Wastes"

PROJECT SITE: Pullman, Washington

DATE AWARDED:

FEDERAL GRANT: $30,400

TOTAL EST. PROJ. COST: $78,000

PROJECT NUMBER: 13040DFN

PPBS NO. 1304

DESCRIPTION OF PROJECT: The objectives of this project are: (1) to demonstrate that hydraulic cleaning of cattle pens followed by anaerobic-aerobic lagoon disposal of the manure can be an economically feasible and esthetically acceptable method of manure management (2) to demonstrate that both water pollution prevention and water conservation can be achieved by treatment and re-use of flushing water, and (3) to investigate the possibility of nutrient recovery for either fertilizer or high protein feed from a tertiary flushing water treatment pond.

INQUIRIES: ***Contact the*** Agricultural and Marine Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
433 Indiana Ave. N.W.

INFORMATION SHEET

COB 5/27/69
Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Research, under Section 5, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR: (Name and Address)	Michigan State University East Lansing, Michigan 48823
PROJECT DIRECTOR: (Name and Address)	Mr. Merle L. Esmay Agricultural Engineering Dept. Michigan State University East Lansing, Michigan 48823
TITLE OF PROJECT:	"CLOSED SYSTEM WASTE MANAGEMENT FOR LIVESTOCK"
PROJECT SITE:	East Lansing, Michigan

PROGRAM (PROJECT) NUMBER: 13040DKP

DATE OFFERED: March 3, 1969

DATE ACCEPTED (AWARDED):

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: 3/3/69 Thru: 3/3/70	$ 54,608	$49,904

DESCRIPTION OF PROJECT:

It is the broad objective of this research to determine the design parameters of a self-contained, automated animal waste management scheme.

The main objective is the development of a liquid manure processing system which is capable of fractionating animal waste into its liquid and solid components, both of which will not cause aesthetic or pollutional problems after processing.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE:
New York State College of Agriculture
Cornell University
Ithaca, New York 14850

TITLE OF PROJECT: "Tertiary Treatment of Animal Waste Waters"

PROJECT SITE: Ithaca, N. Y.

DATE AWARDED:

FEDERAL GRANT: $38,212

TOTAL EST. PROJ. COST: $90, 400

PROJECT NUMBER: 13040 DPA

PPBS NO. 1304

DESCRIPTION OF PROJECT:

The objectives of this project are to: evaluate feasible processes applicable to the removal of nitrogen, phosphorus, and color from animal waste waters, especially intermittent, concentrated waste waters; and indicate the most feasible processes and the manner they may be integrated to treat actual animal wastes. Laboratory scale studies shall be performed to apply such processes as ammonia stripping, denitrification and combined phosphorus precipitation and color removal on dairy cattle and poultry wastes.

INQUIRIES: *Contact the* Agricultural and Marine Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
633 Indiana Ave. N.W.
Washington, D. C. 20242

INFORMATION

[illegible]

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Research Contract under Section 5, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR: (Name and Address)
Agricultural Research Service
Washington, D.C. 20250

PROJECT DIRECTOR: (Name and Address)
Dr. C. E. Evans
Agricultural Research Service
Post Office Box E
Fort Collins, Colorado

TITLE OF PROJECT: "Pollution Abatement from Cattle Feedlots in Northeastern Colorado and Eastern Nebraska"

PROJECT SITE: Fort Collins, Colorado; Lincoln, Nebraska

PROGRAM (PROJECT) NUMBER: 13040 DPS

DATE OFFERED:

DATE ACCEPTED (AWARDED):

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: 7-1-69 Thru: 6-30-70	$ 307,000	$ 152,000

DESCRIPTION OF PROJECT:

The proposal was negotiated and revised in accordance with program priority and technical needs recommended by the project reviewers. The project will determine the extent and kinds of microbial, chemical and organic pollutants entering the atmosphere, soils, and surface and underground water supplies from cattle feedlots in two contrasting climatic zones, northeastern Colorado with annual precipitation of 14-15 inches and eastern Nebraska with annual precipitation of 27-28 inches. It will also evaluate different feedlot management systems for their effectiveness and efficiency in disposing of both liquid and solid wastes under two different climatic conditions.

INQUIRIES: Contact Project Coordination
[illegible]

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: University of Kansas

TITLE OF PROJECT: Cattle Feedlot Wastewater Treatment

PROJECT SITE: Lawrence, Kansas	DATE AWARDED:
FEDERAL GRANT: 18,377.00	TOTAL EST. PROJ. COST: 73,273.00
PROJECT NUMBER: 13030 DWS	PPBS NO. 1304

DESCRIPTION OF PROJECT:

To evaluate an anaerobic and aerobic lagoon system for the treatment of beef cattle feed lot waste water.

INQUIRIES: Contact the

Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
633 Indiana Ave. N.W.
Washington, D. C. 20242

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act(Clean Water Restoration Act).

GRANTEE: Midwest Research Institute
Kansas City, Missouri

TITLE OF PROJECT: "The Utilization/Disposal of Cattle Feedlot Waste by Pyrolysis"

PROJECT SITE: Kansas City, Missouri

DATE AWARDED:

FEDERAL GRANT: $75,000

TOTAL EST. PROJ. COST: $75,000

PROJECT NUMBER: 13040EGH

PPBS NO. 1304

DESCRIPTION OF PROJECT:

The objectives of this project are (a) to determine on a pilot scale the type and amount of products that can be produced by pyrolyzing cattle feedlot waste at various temperatures and pressures and under various inert atmospheres and (b) to prepare an economic evaluation of the process including capital costs, operating costs and income from products.

NOT REPRODUCIBLE

[illegible]

INFORMATION SHEET

Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a GRANT, under Section 6, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR: (Name and Address)

H. L. Mills, Brooklawn Dairy Farm
Route 1
Hagerstown, Maryland 21740

PROJECT DIRECTOR: (Name and Address)

Dr. David S. Kappe
Kappe Associates, Inc.
P.O. Box 1036
Rockville, Maryland 20850

TITLE OF PROJECT:

"Proposal for the Development and Demonstration of Methods for Treatment of Dairy Farm Wastewaters"

PROJECT SITE: Hagerstown, Maryland

PROGRAM (PROJECT) NUMBER: 13040 ELI

DATE OFFERED:

DATE ACCEPTED (AWARDED):

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: 12/1/69 Thru: 8/31/72	$ 183,860	$ 128,702

DESCRIPTION OF PROJECT:

The objectives of the proposed project are basically to develop, to evaluate, and to demonstrate a treatment system that will be able to satisfactorily treat the animal wastes and runoff from dairy cattle holding areas.

The envisioned system will effect treatment biologically and will operate on an automated "fill and draw" basis. This basis of operation has the advantages that it obviates the need for an expensive settling tank and lends itself quite nicely to the intermittent demands of the usual dairy farm work schedule. The system will consist of an aerated grit separator; an aeration tank, which, for experimental purposes, will be divided into two independently operable sections; a blower and pump building; a chlorine contact tank; and means for using the chlorinated effluent for washing down the system and the holding area.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

INFORMATION SHEET

12-2-69
Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a grant, under Section 6, .ederal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR: (Name and Address)
Ohio State University
Columbus, Ohio 43210

PROJECT DIRECTOR: (Name and Address)
Dr. E. Paul Taiganides
Agricultural Engineering Department
The Ohio State University
2073 Neil Avenue
Columbus, Ohio 43210

TITLE OF PROJECT:

"Automated System for Water Pollution Control from an Animal Production Unit"

PROJECT SITE: Columbus, Ohio

PROGRAM (PROJECT) NUMBER: 13040 EOL

DATE OFFERED:

ATE ACCEPTED (AWARDED):

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: 11/1/69 Thru: 4/30/71	$ 78,130	$ 50,575

DESCRIPTION OF PROJECT:

The specific objectives of the project are: (1) to demonstrate to animal producers the type of waste treatment unit operations which could be used to process wastes from animal production unit (2) to demonstrate a system of automated handling of animal wastes, (3) to demonstrate an animal waste treatment system which would not create a public nuisance and whose effluent could be of such quality that it could not contribute to water pollution.

The wastes from a 500-pig confinement unit will be flushed into a settling tank. The supernatant of the tank will be processed by aeration in an oxidation ditch, clarified, chlorinated and recirculated through the animal building as flushing water. The solids settled out of the settling tank will be stored in a storage tank which will have a capacity of 90 - day detention time. The solids will then bedisposed by field spreading.

QUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

INFORMATION SHEET

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Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Grant, under Section 6, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR:
(Name and Address)
Iowa State University
Ames, Iowa 50010

PROJECT DIRECTOR:
(Name and Address)
Dr. J. Ronald Miner
Iowa State University
Ames, Iowa 50010

TITLE OF PROJECT:

"Demonstration of a Recirculating Swine Waste Treatment System Using an RBC"

PROJECT SITE: Ames, Iowa

PROGRAM (PROJECT) NUMBER:

13040 ERR

DATE OFFERED:

DATE ACCEPTED (AWARDED):

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: 1/1/69 Thru: 12/30/71	$ 273,849	$ 163,299

DESCRIPTION OF PROJECT:

The overall objective of this project is to demonstrate the feasiblility of using treated waste water from confinement hog production unit for waste removal within the facilities. The specific objectives are as follows: (1.) Demonstrate the effectiveness of a flushing gutter system for handling manure from a hog finishing building. (2.) Demonstrate the effectiveness of the Rotating Biological Contractor system in treating overflow from an anaerobic lagoon receiving liquid hog manure. (3) Demonstrate the suitabiligy of using treated waste water as the flushing medium for a hog finishing building. (4) Determine the operating costs and management skills required to operate this waste management system.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

13040 EYX
INFORMATION SHEET

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Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Grant, under Section 5, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR:
(Name and Address)
Iowa State University
Ames, Iowa 50010

PROJECT DIRECTOR:
(Name and Address)
Mr. T. L. Willrich
Iowa State University
Ames, Iowa

TITLE OF PROJECT: Proceedings for "Conference on the Role of Agriculture in Clean Water."

PROJECT SITE: Ames, Iowa

PROGRAM (PROJECT) NUMBER:
13040 EYX

DATE OFFERED:

DATE ACCEPTED (AWARDED):

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: Nov. 18, 1969	$ 13100	$ 5,500
Thru: Nov. 20, 1969		

DESCRIPTION OF PROJECT:

The grant award is to support publication of the proceedings of the "Conference." Subjects covered in the conference are "Sediment as a Water Pollutant," Plant Nutrients as a Water Pollutant," Pesticides as Water Pollutants," and "Animal Wastes as Water Pollutants."

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: Carnegie - Mellon University
Mellon Institute
4400 5th Avenue
Pittsburgh, Pennsylvania 15213

TITLE OF PROJECT: "Acid Mine Drainage - Pilot Plant Evaluation"

PROJECT SITE: Pittsburgh, Pa.

DATE AWARDED:

FEDERAL GRANT: $40,117

TOTAL EST. PROJ. COST: $44,575

PROJECT NUMBER: 14010DKN

PPBS NO. 1401

DESCRIPTION OF PROJECT:

The purpose of the research is to advance the understanding of the effect of microbiological factors of formation of acid mine drainage. It is intended to demonstrate the feasibility of a method for quantification of biological-chemical reactions and their rates of production of acid mine water. The study involves a systematic application of selected environmental and physical factors into a laboratory test model to simulate acid mine drainage formation conditions as they occur in the field and to measure their effect.

INQUIRIES: *Contact the*

Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
[redacted]
Washington, D. C. 20242

INFORMATION SHEET — —

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE:

Peabody Coal Company
301 N. Memorial Drive, St. Louis, Missouri 63102

TITLE OF PROJECT:

Lime/Limestone Neutralization of Acid-Mine Drainage

PROJECT SITE:	*DATE AWARDED:*
Illinois, Sabine, Carrier Mills	
FEDERAL GRANT:	*TOTAL EST. PROJ. COST:*
$472,400	$692,000
PROJECT NUMBER:	*PPBS NO.*
4010DAX	1401

DESCRIPTION OF PROJECT:

This project is for the design, construction and operation of a full-scale demonstration plant for the neutralization of acid mine drainage from the Will Scarlet Mine utilizing lime and limestone.

INQUIRIES: *Contact the*

Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
~~[illegible]~~
Washington, D. C. 20242

INFORMATION SHEET

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE:
Syracuse University Research Institute

TITLE OF PROJECT: Inorganic Sulfur Oxidation by Iron-Oxidizing Bacteria

PROJECT SITE: Syracuse, New York	**DATE AWARDED:** July 30, 1968
FEDERAL GRANT: $98,450	**TOTAL EST. PROJ. COST:** $117,575
PROJECT NUMBER: 14010 DAY	**PPBS NO.** 1401

DESCRIPTION OF PROJECT: The objective of this project is to assess the role of inorganic sulfur oxidation in maintaining an acid environment required for iron-oxidizing bacteria. These bacteria will be investigated as they oxidize inorganic sulfur and are the common biological catalysts found in acid mine water. Cell free extracts & purified enzymes from sulfur-grown ferrobacilli will be used: physical & chemical parameters will be examined as regards their effect on the enzymes.

NOT REPRODUCIBLE

INQUIRIES: Contact the

Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
633 Indiana Ave. N.W.
Washington, D. C. 20242

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: Truax-Traer Coal Company
111 North Wabash Avenue
Chicago, Illinois 60602

TITLE OF PROJECT: "Demonstration of Control of Acid Drainage from Coal Mine Refuse Piles and Slurry Areas"

PROJECT SITE: DuQuoin, Illinois	*DATE AWARDED:*
FEDERAL GRANT: $490,560	*TOTAL EST. PROJ. COST:* $720,800
PROJECT NUMBER: 14010DDH	*PPBS NO.* 1401

DESCRIPTION OF PROJECT:

It is proposed to demonstrate suitable procedures for reclamation of coal cleaning plant refuse piles and associated slurry lagoons with the elimination of acid drainage. Information derived from this study, covering measurement of acid and acid production sites, and revegetation procedures, will provide a basis for the rational and efficient engineering design of future reclamation projects.

INQUIRIES: *Contact the*

Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
633 Indiana Ave. N.W.
Washington, D. C. 20242

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: Department of Mines and Mineral Industries
Commonwealth of Pennsylvania
660 Boas St., Harrisburg, Pa.

TITLE OF PROJECT: "Neutralization and Precoat Filtration of Concentrated Sludges from Mine Water"

PROJECT SITE: Harrisburg, Pa.

DATE AWARDED: June 15, 1968

FEDERAL GRANT: $70,539

TOTAL EST. PROJ. COST: $100,770

PROJECT NUMBER: 14010DII

PPBS NO. 1401

DESCRIPTION OF PROJECT:

The project is directed at providing a cost - effectiveness evaluation of various neutralization processes in the treatment of acid mine drainage. Sludge disposal problems will be studied with emphasis on precoat filtration.

INQUIRIES: *Contact the*

Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
~~633 Indiana [illegible]~~
Washington, D. C. 20242

INFORMATION SHEET

Cob 11/26/69
Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Grant, under Section 5, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR: (Name and Address)
Carnegie-Mellon University
4400 Fifth Avenue
Pittsburgh, Pennsylvania 15213

PROJECT DIRECTOR: (Name and Address)
Robert A. Baker
Carnegie-Mellon University
4400 Fifth Avenue
Pittsburgh, Pa. 15213

TITLE OF PROJECT: "Acid Mine Drainage - Pilot Plant Evaluation"

PROJECT SITE: Pittsburgh, Pennsylvania

PROGRAM (PROJECT) NUMBER: 14010DKN

DATE OFFERED:

DATE ACCEPTED (AWARDED):

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: 12/1/69 Thru: 6/30/70	$ 19,335	$ 17,401

DESCRIPTION OF PROJECT:

This program is a pilot-plant study of the factors involved in acid mine drainage formation with emphasis on the effect of microorganisms. It is proposed to pass water of known properties over typical acid-producing mineral layers under controlled conditions in a pilot plant and to measure the rate and quantity of acid production as a function of aerobic and non-aerobic environments and with and without seeding with specific chemoautotrophic organisms. The central feature of the program is the use of actual mine-core samples containing the sulfuritic material and/or associated rock strata. The pilot-plant serves as a model of a mine. Thus, results will be immediately relevant to the mine location(s) being studied. The study will simultaneously provide basic chemical and biological data to elucidate the reaction mechanisms. This approach is expected to provide practical answers as well as bacis information in the shortest elapsed time.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

INFORMATION SHEET

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: Bituminous Coal Research, Inc.
350 Hochberg Road
Monroeville, Pennsylvania 15146

TITLE OF PROJECT: "Sulfide Treatment of Acid Mine Drainage"

PROJECT SITE: Pa., Allegheny County
Monroeville

DATE AWARDED: Pending 6/28

FEDERAL GRANT: $54,380

TOTAL EST. PROJ. COST: $77,690

PROJECT NUMBER: 14010DLC

PPBS NO. 1401

DESCRIPTION OF PROJECT:

This project involves laboratory process studies on the recovery of sulfide reagents from sludge, production of sulfides from coal refuse material and optimization of various unit operations. Engineering and costs evaluation of the system projected to full industrial scale operation will be made. If these evaluations are favorable, a pilot plant and later a demonstration plant may be considered.

INQUIRIES: Contact the
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
~~[illegible]~~
Washington, D. C. 20242

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: Halliburton Company
Duncan, Oklahoma

TITLE OF PROJECT: Research, Development and Field Testing of Mine Water Pollution Abatement Methods.

PROJECT SITE: Clarksburg, W. Va.
DATE AWARDED: July 15, 1968

FEDERAL GRANT: $322,000
TOTAL EST. PROJ. COST: $322,000

PROJECT NUMBER: 14010DMO
PPBS NO. 1401

DESCRIPTION OF PROJECT:

To conduct research and development of techniques and materials for rapid building of bulkheads to permit more efficient mine sealing activities (grouting). Laboratory and field work will be conducted to develop more efficient pneumatic placement of plugs and bulkheads and render them impermeable after placement. Further techniques will be developed for plugging a high flow mine and the feasibility of developing plugs of controlled permeability will be determined. The work to be performed, will expand our knowledge so as to have greater applicability of this sealing method as well as providing us with more realistic estimates as to the limitations of this technique.

INQUIRIES: *Contact the*

Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
~~[illegible]~~.
Washington, D. C. 20242

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE:
Texas A&M Research Foundation

TITLE OF PROJECT:
"Management of Industrial Waste Discharges in Complex Estuarine Systems"

PROJECT SITE: Texas, Brazos County
College Station

DATE AWARDED: April 17, 1968

FEDERAL GRANT:

TOTAL EST. PROJ. COST: $443,733

PROJECT NUMBER: 14010DQW

PPBS NO. 1609

DESCRIPTION OF PROJECT:

This project is concerned with investigations of the quantity and quality parameters relevant to a consistent water quality management program for the Houston Ship Channel-Galveston Bay Estuary. The study is to include data collection and evaluation on such parameters as salinity, diffusion patterns, water and industrial effluent quality, benthal deposits and other pertinent variables. Results of the data evaluations are to be translated into a steady state relationship which provides for achieving water quality standards. The final phases of the study are to be devoted to developing a 3-dimensional, dynamic model of the estuarine system for industrial water quality management.

INQUIRIES: Contact the

Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
633 Indiana Ave. N.W.
Washington, D. C. 20242

[illegible]
Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Grant, under Section 5, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR: (Name and Address)
University of Minnesota
Minneapolis, Minnesota 55455

PROJECT DIRECTOR: (Name and Address)
Dr. Iwao Iwasaki
Mines Experiment Station
University of Minnesota
Minneapolis, Minnesota 55455

TITLE OF PROJECT: "Flocculation and Clarification of Mineral Suspensions"

PROJECT SITE: Minneapolis, Minnesota

PROGRAM (PROJECT) NUMBER: 14010DRB

DATE OFFERED:

DATE ACCEPTED (AWARDED):

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: 1/1/70 Thru: 9/30/70	$ 13,331.00	$ 11,484.00

DESCRIPTION OF PROJECT:

This project shall be directed toward the study of the clarification of plant effluents, particularly those from mineral processing operations, in order to minimize stream pollution from this source. The effects of flocculants such as multivalent cations and polymeric compounds shall be considered and attempts shall be made to determine the mechanisms of the effective use of such materials. Attempts will be made to observe their flocculation and adsorption behavior using pure mineral suspensions and their mixtures. Quartz and goethite are typical minerals which will be studied. Different polymeric flocculants shall be included to study the effect of their chemical constitution.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: Commonwealth of Pennsylvania
Dept. of Mines and Mineral Laboratories

TITLE OF PROJECT: "Feasibility of the Purification of Acid Mine Water by a Partial Freezing Process"

PROJECT SITE: State College, Pa.

DATE AWARDED: August 1, 1968

FEDERAL GRANT: $10,500

TOTAL EST. PROJ. COST: $15,000

PROJECT NUMBER: 14010DRZ

PPBS NO. 1401

DESCRIPTION OF PROJECT:

The objectives of the proposed work are:

1) Assemble information pertinent to the purification of acid mine water from existing publications, reports and other scientific literature.

2) Obtain preliminary experimental test data on the yield and purity of quality product water that can be obtained by a partial freezing process operating on typical acid mine water.

3) Make preliminary flow diagrams and economic evaluations of possible freezing processes for purifying acid mine water.

INQUIRIES: *Contact the*

Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
[redacted].
Washington, D. C. 20242

INFORMATION SHEET – –

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: Dept. of Mines and Mineral Industries
Commonwealth of Pennsylvania
660 Boas St., Harrisburg, Pa. 17120

TITLE OF PROJECT: "Evaluation of Pollution Abatement Procedures in the Moraine State Park, Butler County, Pennsylvania"

PROJECT SITE:	Butler County, Pa.	**DATE AWARDED:**	August 1, 1968
FEDERAL GRANT:	$15,120	**TOTAL EST. PROJ. COST:**	$21,600
PROJECT NUMBER:	14010DSC	**PPBS NO.**	1401

DESCRIPTION OF PROJECT:

The project is for the purpose of ascertaining the effectiveness of various remedial procedures which have been applied to a large Western Pennsylvania State Park so that judgment may be made relative to wide spread application of specific pollution abatement projects. Water quality and quantity measurements will be made at sampling points throughout the Muddy Creek Watershed.

TIME:
August 1, 1968 through July 30, 1971
(3 years)

INQUIRIES: Contact the

Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
[illegible]
Washington, D. C. 20242

INFORMATION SHEET--

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act(Clean Water Restoration Act).

GRANTEE: Department of Mines and Mineral Industries
Commonwealth of Pennsylvania

TITLE OF PROJECT: "Catawissa Creek Mine Drainage Pollution Abatement Project"

PROJECT SITE: Schuylkill and Lugerne Counties, Pa.

DATE AWARDED: June 20, 1968

FEDERAL GRANT: $365,540

TOTAL EST. PROJ. COST: $522,200

PROJECT NUMBER: 14010DSD

PPBS NO. 1401

DESCRIPTION OF PROJECT:

The project is designed to confirm previous estimates of mine drainage pollution abatement and to evaluate the at-source control method of the mine by plugging three existing drainage tunnels within an isolated pocket of coal known as the South Green Mountain Basin. Acid mine drainage is formed when water, air and pyrites react. The principle of inundation of the mine is to prevent this reaction by displacing the air with water.

INQUIRIES: *Contact the*

Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
[illegible]
Washington, D. C. 20242

INFORMATION SHEET

cob 5/27/69
Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a grant, under Section 5, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR: (Name and Address)
President & Fellows of Harvard College
1350 Massachusetts Avenue
Cambridge, Massachusetts 02138

PROJECT DIRECTOR: (Name and Address)
Dr. Warner Stumm
Professor of Applied Chemistry
Harvard University
Cambridge, Massachusetts 02138

TITLE OF PROJECT: "Microbial Mediation in Generation of Acid Mine Wastes."

PROJECT SITE: Cambridge, Massachusetts

PROGRAM (PROJECT) NUMBER: 14010DTC

DATE OFFERED:

DATE ACCEPTED (AWARDED):

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: 7/1/69 Thru: 6/30/70	$ 27,018	$25,667

DESCRIPTION OF PROJECT:

1. To develop a field method which permits measurements of the synthetic activity of autotrophic iron bacteria in situ.

2. To perform field studies with carbon-14

3. a. Measure in situ, the activity of autotrophic bacteria directly or indirectly involved in oxidation of pyritic agglomerates.

   b. Compare microbial activity of various locations in the mine, i.e., vapor phase and liquid phase reaction sites, and interrelate these findings with results on chemical analysis for pH, Fe(II), Fe(III), acidity, SO_4^{-2}.

3. Comparison of mine waters which differ in the rate of acidity production in an attempt to elucidate the chemical and biological factors responsible for these differences.

4. Evaluation of the results with regard to possible modes of control of microbial activity.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior

INFORMATION SHEET

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act(Clean Water Restoration Act).

GRANTEE: Commonwealth of Pennsylvania
Department of Mines and Mineral Industries
660 Boas Street
Harrisburg, Pennsylvania

TITLE OF PROJECT: "Abatement of Acid Mine Drainage Pollution by Reverse Osmosis"

PROJECT SITE: Pennsylvania

DATE AWARDED: June 17, 1968

FEDERAL GRANT: $27,598

TOTAL EST. PROJ. COST: $39,426

PROJECT NUMBER: 14010DYK

PPBS NO. 1401

DESCRIPTION OF PROJECT:

The project shall consist of two phases:

I. Establish general technical parameters for the design and construction of a 10,000 GPD reverse osmosis pilot plant.

II. Design, construct and operate a 10,000 GPD reverse osmosis Pilot Plant for 90 days to define optimum parameters for construction of a 250,000 GPD plant.

INQUIRIES: Contact the
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
[illegible]
Washington, D. C. 20242

Date to be Released
7/17/69

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Grant, under Section 6 (b), Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR: (Name and Address)

Island Creek Coal Company
Island Creek Divison
Holden, West Virginia 25625

PROJECT DIRECTOR: (Name and Address)

Mr. Stonie Barkie, Jr., President
Island Creek Coal Company
Island Creek Division
Holden, West Virginia 25625

TITLE OF PROJECT:

"A Demonstration of a New Mining Technique to Prevent the Formation of Mine Acid in an Active Deep Coal Mine"

PROJECT SITE:

Pittsburgh, Pennsylvania

PROGRAM (PROJECT) NUMBER:

14010DZM

DATE OFFERED:

DATE ACCEPTED (AWARDED):

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: Ten (10) months Thru: Phase I	$ 100,255	$70,178

DESCRIPTION OF PROJECT:

The object of the project is to demonstrate that mining coal in an oxygen-free atmosphere will prevent the formation of acid mine water and that all water from the mine will be acceptable for discharge into a local stream without deleterious effect on the stream. The project will involve the investigation and demonstration of the adaptability of a life support system to conventional coal mining techniques to determine the feasibility of mining coal in an oxygen-free atmosphere.

The project is divided into four (4) phases of which Phase I is being funded under this Grant.

Phase I. Systems Engineering Evaluation
Phase II. Component Evaluations
Phase III. Construction and Operation of Demonstration Mine
Phase IV. Project Evaluation and Final Report

Phase I shall include engineering evaluations of:

1. Life Support Systems
2. In-Mine Systems
3. Outside Systems and Facilities
4. Personnel Programs
5. Water Quality and Quantity Measurements
6. Mine Sites Exploration and Evaluation

At the Conclusion of Phase I a recommendation will be made as to the feasibility of continuing with future phases.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

INFORMATION SHEET

Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Contract, under Section 5, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR: (Name and Address)
The Ohio State University Research Foundation
1314 Kinnear Road
Columbus, OH 43212

PROJECT DIRECTOR: (Name and Address)
Dr. Edwin E. Smith
Department of Chemical Engineering
The Ohio State University
Columbus, OH 43212

TITLE OF PROJECT:

"Pyritic Systems: A Mathematical Model

PROJECT SITE:
Columbus, Ohio
Vinton County, Ohio
DuQuoin, Illinois

PROGRAM (PROJECT) NUMBER:
14010EAH
14-12-589

DATE OFFERED:

DATE ACCEPTED (AWARDED):

October 22, 1969

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: 10/22/69 Thru: 10/21/71	$	$ 68,918

DESCRIPTION OF PROJECT:

This project will develop a mathematical model of pyritic chemical systems that can be used to evaluate the interactions of the many variables involved in the creation of acid drainage from coal mines. By considering the various chemical processes defined by previous research, and the hydrology and geometery of various mines and stripped areas, the model will be used to predict the severity of acid mine drainage based on these measured parameters. The results of this model will lead to more efficient mine drainage control technology.

The model will be developed with the aid of a digital computer, and will be tested with data from the McDaniels Test Mine in Vinton County, Ohio and a strip-mined area near DuQuoin, Illinois.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act(Clean Water Restoration Act).

GRANTEE: Commonwealth of Pennsylvania
Dept. of Mines & Mineral Industries
660 Boas St., Harrisburg, Pa.

TITLE OF PROJECT: "Study of the Use of In-situ Precipitation of Sludge Resulting from Reaction of Mine Water with Low Cost Additives in an Abandoned Mine to Prevent Mine Drainage Pollution"

PROJECT SITE: Pennsylvania, Cambria, Elder Township

DATE AWARDED: June 4, 1968

FEDERAL GRANT: $227,524.20

TOTAL EST. PROJ. COST: $325,034.60

PROJECT NUMBER: 14010EFJ

PPBS NO. 1401

DESCRIPTION OF PROJECT:

The project is to develop and test an in-situ technique for the injection of a mixture or slurry of various neutralizing and filler materials into an abandoned mine. The initial phase of the study will involve a 4 month series of laboratory tests to confirm the technical feasibility of the method and an evaluation of site selection.

Phase two will be the pilot installation and demonstration of the technique, treating part, or all of an abandoned mine.

INQUIRIES: *Contact the*

Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
~~[illegible]~~
Washington, D. C. 20242

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act(Clean Water Restoration Act).

GRANTEE: Commonwealth of Pennsylvania
Department of Mines and Mineral Industries
660 Boas Street
Harrisburg, Pennsylvania

TITLE OF PROJECT: "Use of Latex as a Soil Sealant to Control Acid Mine Waste Discharge"

PROJECT SITE: Pennsylvania, Clearfield County, Cooper Township

DATE AWARDED: June 17, 1968

FEDERAL GRANT: $181,839

TOTAL EST. PROJ. COST: $259,770

PROJECT NUMBER: 14010EFK

PPBS NO. 1401

DESCRIPTION OF PROJECT:

The program involves attempting to provide a latex rubber seal between surface water and the underground mine. This will reduce the amount of water percolating through the soil into the mine and reduce the flow of mine waters. The project will proceed in three phases:

1. Laboratory Investigation - to study soil characterization of core samples - determining percolation rates, pH profiles and an analysis of the mineral, bacterial content and particle size of the soil. Soil sealants will be tested to determine the most superior formulation.

2. Preparation of Field Application - to study the natural characteristics of the soil and its acid characteristics for coagulation of the latex.

3. Application and Field Evaluation - to carry out the program by application of the latex to the soil, coagulation, and evaluation of the properties of the test site and the contiguous control area.

INQUIRIES: *Contact the*

Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
[illegible]
Washington, D. C. 20242

[illegible]
Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Grant, under Section 6 (b), Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR: (Name and Address)
Commonwealth of Pennsylvania
Department of Mines & Mineral Industries
660 Boas Street
Harrisburg, Pennsylvania 17102

PROJECT DIRECTOR: (Name and Address)
Dr. David Maneval
Department of Mines & Mineral Industries
Commonwealth of Pennsylvania
660 Boas Street
Harrisburg, Pennsylvania 17102

TITLE OF PROJECT:

"Study of the Use of Inert Gas to Eliminate Acid Pollution from Abandoned Deep Mines"

PROJECT SITE: Stewart Township
Fayette County, Pennslyvania

PROGRAM (PROJECT) NUMBER: 14010EFL

DATE OFFERED:

DATE ACCEPTED (AWARDED):

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: 12 months Thru:	$ 117,884	$ 45,884

DESCRIPTION OF PROJECT:

It is proposed to continue the study on the use of inert gas, previously funded as WPRD-227. It is planned to study two mines, (15 acres and 50 acres respectively) and to determine the gas requirements needed to maintain a positive pressure in each of these mines during barometric cycles. The maintaining of positive pressures of inert gas will displace all of the oxygen, thus greatly reducing the acid forming potential of these mines. The information thus gained should be applicable to a great many mines.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

INFORMATION SHEET -- --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE:

Coal Research Board
Dept. of Mines and Mineral Industries

TITLE OF PROJECT: "Application of Bacteriophages to Eliminate Mine Acids"

PROJECT SITE: Wash. & Green Counties
Pennsylvania

DATE AWARDED:

FEDERAL GRANT: $86,484

TOTAL EST. PROJ. COST: $123,723

PROJECT NUMBER: 14010EGJ

PPBS NO. 401

DESCRIPTION OF PROJECT:

This project will provide data to demonstrate the feasibility of using inhibitory organisms to inhibit the activity of acid producing bacteria. The project includes investigations into the isolation, identification and culturing of these inhibitory organisms. Cultures will be developed from "sweetwaters" of nearby neutral mines and these organisms will be tested for inhibitory action on those bacteria normally present in acid mine effluents. After definite evidence is available as to inhibitory action, 10,000-15,000 gallons of such "sweetwaters" will be pumped into two different types of acid producing mines and the effluents of those mines will be monitored over a period of several months to establish the effect of the inoculation.

Concurrently, studies will be carried out to determine the rates of movement of bacteria and of potential inhibitory organisms through synthetic coal piles.

INQUIRIES: Contact the

Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
633 Indiana Ave. N.W.
Washington, D. C. 20242

INFORMATION SHEET

cob 6/6/69
Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Grant, under Section 6 (b), Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR:
(Name and Address)

Department of Mines & Mineral Industries
Commonwealth of Pennsylvania
660 Boas Street
Harrisburg, Pennsylvania 17102

PROJECT DIRECTOR:
(Name and Address)

David R. Maneval
Department of Mines & Mineral Industries
Commonwealth of Pennsylvania
660 Boas Street
Harrisburg, Pennsylvania 17102

TITLE OF PROJECT:

"Detection and Location of Concealed Abandones Underground Mines and Associated Drainage by Geophysical & Geochemical Techniques"

PROJECT SITE:

State College, Pennsylvania

PROGRAM (PROJECT) NUMBER:

14010EHN

DATE OFFERED:

DATE ACCEPTED (AWARDED):

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: 18 months Thru:	$164,780	$115,346

DESCRIPTION OF PROJECT:

It is proposed to attempt to detect the precise location of concealed mine portals, mine workings, vents, fractures, jointing patterns and slump zones; In short, the detection and location of any avenue of water movement into or out of the mine as well as the mine itself. This will provide a more comprehensive approach to the general and effective mine sealing program. Selected geophysical and geochemical approaches will be evaluated in the laboratory and several (4-6) will be selected as being the most promising for field testing and evaluation.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

INFORMATION SHEET

9-17-69
Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Grant, under Section 6 (b), Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR: (Name and Address)
Hi-Hills Ranch, Incorporated
Greensboro Star Rt.
Waynesburg, Pennsylvania 15370

PROJECT DIRECTOR: (Name and Address)
F. W. Niggemyer
Greensboro Star Rt.
Waynesburg, Pennsylvania 15370

TITLE OF PROJECT:

"Disposal of Sludge from Acid Mine Drainage Treatment Plants"

PROJECT SITE:

Bealsville, Pennsylvania

PROGRAM (PROJECT) NUMBER:

14010EHZ

DATE OFFERED:

DATE ACCEPTED (AWARDED):

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: 24 months Thru:	$356,000.00	$189,500.00

DESCRIPTION OF PROJECT:

The objectives of this research and demonstration project are to demonstrate that sludge from acid mine drainage neutralization plants can be dispersed on to the soil without pollution to the streams or ground water and also provide filteration of the solids without harm to the soil or vegetation.

At Jones & Laughlin Steel Company's Thompson treatment plant unsettled lime neutralized mine drainings will be sprayed to demonstrate that sprinkler irrigation can be used to aerate the waste to remove the iron and the soil used to filter the solids. Controlled runoff will be maintained at the site. Various sprinkler types and vegetive cover will be used to optimize this operation. Water, sludge and soil samples will be taken before, during and after all tests.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

— INFORMATION SHEET

6/20/69- Cob
Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Grant, under Section 6 (b), Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR: (Name and Address)
Department of Mines & Mineral Industries
Commonwealth of Pennsylvania
660 Boas Street
Harrisburg, Pennsylvania 17102

PROJECT DIRECTOR: (Name and Address)
David R. Maneval
Department of Mines & Mineral Industries
Commonwealth of Pennsylvania
660 Boas Street
Harrisburg, Pennsylvania 17102

TITLE OF PROJECT:

"Development and Optimization of the Limestone Treatment of Coal Mine Drainage"

PROJECT SITE:

Pittsburgh, Pennsylvania

PROGRAM (PROJECT) NUMBER:

14010EIZ

DATE OFFERED:

DATE ACCEPTED (AWARDED):

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: (12) months Thru:	$106,480.00	$74,536.00

DESCRIPTION OF PROJECT:

Phase 1. Laboratory Studies

1. Chemical composition and physical properties of limestones such as particle size, surface area, density, and others as necessary for evaluation will be determined. Neutralization curves, effected by the change in pH resulting from the addition of limestone and a suitable oxidizing agent to simulated and/or actual mine water, will be used to evaluate the limestones as neutralizing agents for mine water. The number of limestones to be examined will be determined as time permits and will be selected on consultation with industry and with the project sponsors.

2. Data obtained from these neutralization curves will be verified by treating one actual mine water with the limestone after evaluation as discussed under (1) above. Both batch scale and one-gallon-per-minute continuous flow tests will be utilized with examination, as necessary, of sludge properties with the objective of improving settling of the sludge.

Phase 2. Evaluation of Field Research Units(s)

Data from Phase 1 above and from previously mentioned studies (WPRD-63-01-68 and CR-75), particularly from the continuous flow experiments, will be used to evaluate field research units for limestone treatment of actual mine waters at the site of discharge. Choice of the mine drainage site(s), conditions for treatment, and effluent standards will be specified as part of the engineering study and recommendation.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

INFORMATION SHEET

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Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Grant, under Section 6 (b), Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR: (Name and Address)
Department of Mines & Mineral Industries
660 Boas Street
Harrisburg, Pennsylvania 17102

PROJECT DIRECTOR: (Name and Address)
David R. Maneval, Ph.D.
Director of Research and Development
Room 218, Towne House Apartments
660 Boas Street
Harrisburg, Pennsylvania 17102

TITLE OF PROJECT:

"Recovery of Iron in a More Dense Form from Coal Mine Drainage"

PROJECT SITE:

Pittsburgh, Pennsylvania

PROGRAM (PROJECT) NUMBER:

14010EJT

DATE OFFERED:

DATE ACCEPTED (AWARDED):

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: 12 months Thru:	$81,695.00	$57,186.50

DESCRIPTION OF PROJECT:

The overall research program will be conducted in three phases. This current program deals with the first phase which includes the development of a conceptual process for the removal of iron sludge by means of a more dense precipitate. This phase will include bench-scale test work, which it is hope will lead to the development of a conceptual continuous-flow process for the treatment of specific types of mine water.

Phase I

1. To conduct a systematic study of the effects of increasing amounts of interfering species, especially Al^{3+}, on the formation of a more dense sludge from acidified ferrous sulfate solutions. Potential seed materials will be evaluated.
2. Using the results of these studies, to determine the type of natural mine waters (or mixtures thereof) which would be amenable to treatment by a process resulting in more dense sludge recovery, and to confirm such deductions by tests on actual mine waters.
3. Based on the results of studies proposed above, to develop a conceptual process with cost estimates for the recovery of iron in a more dense form from mine water or mine water mixtures.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

Phase 2

4. To conduct laboratory studies on the further development of the process by operation on a continuous flow basis.

5. To design a field research unit for the further development of the process.

Phase 3

6. To construct and operate the proposed field research unit to obtain engineering data with cost estimates required for an evaluation of the process projected to full scale operation.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D.C. 20242

INFORMATION SHEET

cob 6/17/69
Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Grant, under Section 6 (b), Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR: (Name and Address)
Board of Governors
West Virginia University
Morgantown, West Virginia 26506

PROJECT DIRECTOR: (Name and Address)
Dr. Richard M. Smith
Department of Agronomy & Genetics
West Virginia University
Morgantown, West Virginia 26506

TITLE OF PROJECT:

"Mine Spoil Potentials for Water Quality and Controlled Erosion"

PROJECT SITE: Morgantown, West Virginia

PROGRAM (PROJECT) NUMBER:
14010EJE

DATE OFFERED:

DATE ACCEPTED (AWARDED):

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From:7/1/69 Thru:6/30/71	$ 224,028	$ 156,328

DESCRIPTION OF PROJECT:
The purpose of this investigation is to enable strip mine operators and soil conservationists to eliminate serious water pollution from mine spoil. Specific objectives are summarized as follows: (1) To determine certain physical and chemical properties of coal overburden strata that influence suitability of mine spoil for soil formation, and unpolluted runoff or seepage water. (2) To determine processes and rate of physical and chemical change of important spoil properties by natural or induced weathering. (3) To determine interactions between growing plants and properties of spoil and water. This will also include interactions between plants and microorganisms and the influence of microbes on mineral mobility. (4) To determine effectiveness of plant cover, microorganisms and related practices in prevention of erosion, sedimentation, and in reducing acidity and chemical pollution of water from characterized spoil. (5) To improve precision of spoil classification.

Amounts and distribution of the various reduced and oxidized forms of sulfur in coal overburden and resulting spoil will be determined. Additionally, the acid neutralizing potential of rocks and spoil will be determined in order to show what admixtures are needed to provide spoil water suitable for a healthy biosphere.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

INFORMATION SHEET

Co/3 9/18/68
Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Grant, under Section 6 (b), Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR: (Name and Address)
Department of Mines & Mineral Industries
660 Boas Street
Harrisburg, Pennsylvania 17102

PROJECT DIRECTOR: (Name and Address)
Dr. David R. Maneval
Commonwealth of Pennsylvania
Department of Mines & Mineral Industries
660 Boas Street
Harrisburg, Pennsylvania 17102

TITLE OF PROJECT:

"Use of Gel Material for Sealing Deep Mine Openings"

PROJECT SITE: Keystone State Park, Pennsylvania

PROGRAM (PROJECT) NUMBER:

14010EKW

DATE OFFERED:

DATE ACCEPTED (AWARDED):

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: 26 months Thru:	$ 205,000	$ 143,500

DESCRIPTION OF PROJECT:
It is proposed to attempt to seal the portal and other openings of an abandoned drift mine. The proposed seal will be composed of a chemical grout of low molecular weight polyphenolic polymer which will be injected into the mine void to create the watertight seal. As a safety precaution a reinforced concrete seal will be used as a method of insuring against structural failure and release of a large volume of highly acidic water.

A surveillance program will be inititated to study the effectiveness of the seals and to determine the changes in the ground water quantity or quality adjacent to the mine site.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

INFORMATION SHEET

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act(Clean Water Restoration Act).

GRANTEE: Continental Oil Company
P.O. Drawer 1267
Ponca City, Oklahoma

TITLE OF PROJECT: "Microbiological Removal of Iron from Mine Drainage Waters"

PROJECT SITE: Ponca City, Oklahoma

DATE AWARDED: August 8, 1967

FEDERAL GRANT: $75,886

TOTAL EST. PROJ. COST: $115,996

PROJECT NUMBER: 14010ENW

PPBS NO. 1401

DESCRIPTION OF PROJECT:

The removal of iron from acid mine drainage waters will be examined using two different microorganisms. First, iron oxidatizing bacteria will be used to convert the iron from the ferrous form to a ferric iron precipitate. Then sulfate reducing bacteria will be utilized to precipitate the iron as iron sulfide. Upon completion of the laboratory testing, field studies will be accomplished using lagoons.

INQUIRIES: *Contact the*

Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
~~[illegible]~~.
Washington, D. C. 20242

INFORMATION SHEET – –

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 5, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: Ohio State University
Research Foundation
Columbus, Ohio

TITLE OF PROJECT: "A Pilot-Scale Study of Acid Mine Drainage"

PROJECT SITE: Southern-Eastern Ohio

DATE AWARDED: June 30, 1967

FEDERAL GRANT: $40,301

TOTAL EST. PROJ. COST:

PROJECT NUMBER: 14010EXA

PPBS NO. 1401

DESCRIPTION OF PROJECT:

The project activities are designed to establish a systems research approach to the investigation of acid mine-drainage. The study will attempt to define the controlling factors and to assess the significance of acidic conditions in abandoned mines, currently inactive ones, and in future mining areas. Attempts will be made to assess the characteristics of acid formation, to establish systems to monitor adequately the variables selected, and to attack the problem with suitable abatement measures.

The activities will include two types of research. (1) Research will be concerned with a comprehensive chemical, bacteriological study of the sulfide-to-sulfate reaction to establish the rate controlling mechanism; the sequence of intermediate reactions; and the significance of intermediate substances in the process. (2) Research will be directed to design and establish a complex and well controlled experimental (model) area where the effects of mining on acid mine waters and on the general recovery of the area can be investigated and evaluated on a continuing basis.

INQUIRIES: *Contact the*

Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
~~[illegible]~~
Washington, D. C. 20242

INFORMATION SHEET

Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Contract, under Section 6 (b), Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR: (Name and Address)
Resources Engineering Associates
Environmental Research & Applications, Inc.
Wilton, Connecticut 06897

PROJECT DIRECTOR: (Name and Address)
Robert N. Rickles, Ph.D., P.E.
Resource Engineering Associates
Environmental Research & Applications, Inc.
Wilton, Connnecticut 06897

TITLE OF PROJECT:

"The Effect of Soluble Iron Upon Municipal Waste Treatment Facilities"

PROJECT SITE:

PROGRAM (PROJECT) NUMBER:

14010 FBZ

DATE OFFERED:

DATE ACCEPTED (AWARDED):

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: Seven months Thru:	$	$23,000

DESCRIPTION OF PROJECT:

To determine whether the iron enriched brine, (from mine drainage) from any of several demineralization processes, may be advantageously disposed of through additon to to municipal waste sewerage. The current practice of using small amounts of ferric chloride or ferric sulfate in waste treatment plants is well documented. This practice greatly enhances the coagulation and sedimentation of materials present in waste sewerage. If the waste brine, which contains considerable amounts of ferrous and ferric sulfate may be used in waste treatment plants, it would be highly advantageous to dispose of the significant amounts of minerals in this manner. The present study will be concerned with the physical, chemical and biological effects and advantages of this practice.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

INFORMATION SHEET

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Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Grant, under Section 5 Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR: (Name and Address)	Carnegie-Mellon University Pittsburgh, Pennsylvania
PROJECT DIRECTOR: (Name and Address)	Robert A. Baker Mellon Institute Carnegie-Mellon University 4400 Fifth Avenue Pittsburgh, PA. 12
TITLE OF PROJECT:	"Evaluation of Pyritic Oxidation by Nuclear Methods"
PROJECT SITE:	Pittsburgh, Pennsylvania

PROGRAM (PROJECT) NUMBER: 14010FII

DATE OFFERED:

DATE ACCEPTED (AWARDED):

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: 1/1/70 Thru: 12/31/71	$ 39,635	$ 35,672

DESCRIPTION OF PROJECT:

This project will be directed toward making use of the Mossbauer effect through spectroscopically monitoring the oxidation processes taking place on iron pyritic materials during acid mine drainage formation. A specific objective is to determine the role of chemoautotrophic organisms in such oxidative mechanisms. These organisms may promote ferrous and sulfide dissolution from pyritic strata, accelerate the oxidative reaction once these irons are present aqueous solutions or contribute by some combination of these mechanisms.

Natural and synthetic pyrites are to be exposed to carefully-controlled gaseous and aqueous environments, with and without selected microorganisms. The nature and rate of reaction products are to be monitored by various chemical and biological techniques with emphasis on Mossbauer effect spectroscopy and radiochemical procedure. The oxidation mechanisms for ferrous and sulfide ions, the effect of specific and mixed chemoautotrophic organisms and the effect of pyritic properties on acid mine drainage are to be determined.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

INFORMATION SHEET

CoB 1/20/70
Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Grant, under Section 6 (b), Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR: (Name and Address)
West Virginia University
Morgantown, West Virginia 26506

PROJECT DIRECTOR: (Name and Address)
Edwin B. Wilson, Research Engineer
Coal Research Bureau
School of Mines
West Virginia University
Morgantown, West Virginia 26506

TITLE OF PROJECT:
"The Thickening and Dewatering of Precipitates From the Lime/Limestone Treatment of Mine Drainage"

PROJECT SITE:
Morgantown, West Virginia

PROGRAM (PROJECT) NUMBER:
14010FJX

DATE OFFERED:

DATE ACCEPTED (AWARDED):

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From:1/1/70 Thru:1/1/72	$99,938.40	$69,956.88

DESCRIPTION OF PROJECT:

This project will provide the technical information necessary so that: (1) existing knowledge may be properly applied; and, (2) new or conceptual knowledge may be utilized in order to densify the sludge which results from lime or limestone mine water treatment. Knowledge and procedures in the areas of both chemical and mechanical densification will be employed. Broad areas of specialization which are concerned with these techniques include; coagulation, flocculation, decantation, filtration, thickening, centrifuging and cycloning.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

INFORMATION SHEET

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RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Grant, under Section 5, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR: (Name and Address)
West Virginia University
Board of Regents
Morgantown, West Virginia 26506

PROJECT DIRECTOR: (Name and Address)
Edwin B. Wilson
Coal Research Bureau
School of Mines
West Virginia University
Morgantown, West Virginia 26506

TITLE OF PROJECT: "Mining Operations for the Reduction of Harmful Drainage from Underground Coal Mines"

PROJECT SITE: Morgantown, West Virginia

PROGRAM (PROJECT) NUMBER: 14010FKK

DATE OFFERED:

DATE ACCEPTED (AWARDED):

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: 1/1/70 Thru: 7/1/72	$ 87,543.40	$ 83,166.23

DESCRIPTION OF PROJECT:

The project will be directed toward the ultimate objective of delineating those those technically and economically optimum underground coal mine operating practices which are and which can be employed as a means of preventing or substantially reducing the generation and efflux of harmful drainage water. This goal will be accomplished through completion of the following sub-objectives:

(I) A "State of the Art" publication which fully delineates all technology that is currently available and which can be effectively applied to eliminate or reduce harmful mine drainage.

(II) Determination and evaluation of those practices and techniques which are currently employed, although not necessarily published, in underground coal mines for the prevention or reduction of harmful mine drainage.

(III) Delineation of those areas where future research efforts or practical experimentation is required in order to achieve reduction in harmful mine drainage through the application of preventative measures during mining operations.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

INFORMATION SHEET

Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Contract, under Section 6 (b)*, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR·
(Name and Address)

Associated Universities Incorporated,
Brookhaven National Laboratory
Upton, New York 11973

PROJECT DIRECTOR:
(Name and Address)

E. L. Van Horn
Associated Universities, Inc.
Brookhaven National Laboratory
Upton, New York 11973

TITLE OF PROJECT:

"Treatment of Acid Mine Drainage by Ozone Oxidation"

PROJECT SITE:

PROGRAM (PROJECT) NUMBER:

14010FMH

DATE OFFERED:

DATE ACCEPTED (AWARDED):

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: Six months Thru:	$	$20,000

DESCRIPTION OF PROJECT:

To carry out a detailed engineering design and cost estimate study for the production and supply of ozone by the following methods.

1. The synthesis of ozone by the corona electric discharge process.
2. The synthesis of ozone by isotopic radiation processes using Co^{60} and Cs^{137} gamma radiation sources.

To evaluate the application of each of the above processes for treatment of acid mine drainage having varying ferrous iron contents and acid conditions.

1. A plant design and cost estimate of the ozone oxidation and limestone neutralization steps will be carried out.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

INFORMATION SHEET

Cob 3/3/70
Date to Be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Grant, under Section 6(b), Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR:
(Name and Address)
Black, Sivalls, & Bryson, Inc.
538 Alpha Drive
Pittsburgh, Pennsylvania 15238

PROJECT DIRECTOR:
(Name and Address)
Mr. P. J. LaRosa
Black, Sivalls, & Bryson, Inc.
538 Alpha Drive
Pittsburgh, Pennsylvania 15238

TITLE OF PROJECT: "Coal Refuse Binder"

PROJECT SITE: Pittsburgh, Pennsylvania

PROGRAM (PROJECT) NUMBER: 14010FOA

DATE OFFERED:

DATE ACCEPTED (AWARDED):

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: 3/1/70 Thru: 8/31/70	$ 18,894	$ 13,226

DESCRIPTION OF PROJECT:

This process is devoted to the study of the sealing of coal refuse piles with a layer of carbonate-bonded refuse to exclude air and moisture from the pile. This is expected to minimize the formation of acid mine drainage. In the process, lime hydrate is blended with coal refuse and treated with carbon dioxide to form strong calcium carbonate (calcite) crystals. The calcite crystals act as a cementing matrix that converts the refuse into a coherent concrete-like material.

A second application of this process is the elimination of refuse piles by utilizing the refuse material as filler in the construction of carbonate-bonded road pavement and in the manufacture of low cost bricks and similar products.

This project will be mainly concerned with the bench-scale experimental efforts which will be undertaken primarily to determine the operating parameters for generating a strong carbonate-bonded coal refuse that is impervious to air and water. The briquettes so produced will be subjected to compression loading tests and tested for their resistance to air and water migration

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

INFORMATION SHEET

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. ~~6~~ 5, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE:
Syracuse University
Research Institute
201 Marshall St., Syracuse, N. Y. 13210

TITLE OF PROJECT: "Biological Treatment of Acid Mine Water"

PROJECT SITE: Syracuse, N. Y.

DATE AWARDED:

FEDERAL GRANT: $47,233

TOTAL EST. PROJ. COST: $54,341

PROJECT NUMBER: 14010FPQ

PPBS NO. 40

DESCRIPTION OF PROJECT:

This proposal is designed to study anaerobic bacteria and their use in alleviation of acid mine drainage problems. These bacteria will generate H_2S while they are metabolizing the sulfate ion and thus precipitate ferrous and ferric sulfides. At the same time, it also raises the pH of the water. These fine sulfide particles have superior physical characteristics as compared to the corresponding metal hydroxides and can be more easily filtered. This technique has the potential to allow us to obtain a relatively pure material which may be used for by-product recovery of sulfur and/or iron, as well as reducing pollution from AMD.

NOT REPRODUCIBLE

INQUIRIES: *Contact the*

Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
633 Indiana Ave. N.W.
Washington, D. C. 20242

INFORMATION SHEET

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 5, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: The Ohio State University Research Foundation
1314 Kinnear Road
Columbus, Ohio 43212

TITLE OF PROJECT: "Acid Mine Drainage - An Analysis of the State-of-the-Art"

PROJECT SITE: Columbus, Ohio

DATE AWARDED: October 1, 1967

FEDERAL GRANT: $32,044 approx.

TOTAL EST. PROJ. COST: $32,044 approx.

PROJECT NUMBER: 14010FPR

PPBS NO. 1401

DESCRIPTION OF PROJECT:

Phase I

This phase, which will comprise the first six month period, will have the primary purpose of producing an immediate critical review of available acid mine drainage information, and of the approaches being used in the solution of the overall problem. This review will be compiled in an interim report which will identify significant accomplishments, and will provide a sound base applicable to the immediate planning of a comprehensive and coordinated research program in that it will identify specific research needs and areas of greatest potential in respect to the solution of the acid mine drainage problem.

Phase II

This phase, comprising the second six month period, will essentially be a continuation of the Phase I review in that work can be continued as required in any of the areas reviewed. This final phase of the work will terminate with the submission of the major state-of-the-art report.

INQUIRIES: Contact the

Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
XXXXXXXXXXXXXXXXXXX
Washington, D. C. 20242

INFORMATION SHEET

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 5, Federal Water Pollution Control Act(Clean Water Restoration Act).

GRANTEE: Ohio State University Research Foundation
1314 Kinnear Road
Columbus, Ohio 43212

TITLE OF PROJECT: "Study of the Sulfide-to-Sulfate Reaction Mechanism"

PROJECT SITE: Columbus, Ohio

DATE AWARDED: June 1, 1968

FEDERAL GRANT: $24,934

TOTAL EST. PROJ. COST: $26,295

PROJECT NUMBER: 14010FPS

PPBS NO. 1401

DESCRIPTION OF PROJECT:

This project is concerned with those investigations designed to point out the important physical and chemical parameters related to the kenetics of the sulfide-to-sulfate reaction. The data observed will be interpreted in light of suggested mechanisms to explain the observed kinetics.

Project Period:

June 1, 1968 - May 31, 1969
(1 year)

INQUIRIES: *Contact the*

Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
XXXXXXXXXXXXXXXXXX
Washington, D. C. 20242

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE:

West Central Texas Municipal Water District
Box 2362
Abilene, Texas

TITLE OF PROJECT:

"North Fork Alluvial Decontamiration Project"

PROJECT SITE: Albany, Texas

DATE AWARDED:

FEDERAL GRANT: $184,816.00

TOTAL EST. PROJ. COST: $272,323.00

PROJECT NUMBER: 14020EHW

PPBS NO. 402

DESCRIPTION OF PROJECT:

To demonstrate the abatement of surface water pollution caused by oil production brine seepage from shallow ground water aquifers using deep well disposal techniques.

INQUIRIES: Contact the

Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
633 Indiana Ave. N.W.
Washington, D. C. 20242

INFORMATION SHEET--

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act(Clean Water Restoration Act).

GRANTEE: Colorado State University
Fort Collins, Colorado 80521

TITLE OF PROJECT: "Evaluation of Potential Water Pollution From Spent and/or Burned Oil Shale Residues"

PROJECT SITE: Ft. Collins, Colorado

DATE AWARDED:

FEDERAL GRANT: $38,000

TOTAL EST. PROJ. COST: $40,000

PROJECT NUMBER: 14030 EDB

PPBS NO. 1403

DESCRIPTION OF PROJECT:

The project objectives are the determination of the following, as a function of the shale residues resulting from those retorting methods considered most economically feasible at the present time:

(a) The porosity, permeability, and particel size distribution of spent and/or burned shale.

(b) The quality (chemical and physical) and quantity of aqueous extracts of spent and/or burned shale.

(c) The statistical correlation of experimental leaching results with the physical properties of shale residues (porosity, permeability, and particle size distribution), the experimental conditions (rainfall application and evaporation), and the retorting methods.

INQUIRIES: *Contact the*

Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
633 Indiana Ave. N.W.
Washington, D. C. 20242

INFORMATION SHEET

C&P 9/12/69
Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Grant, under Section 6 (b), Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR: (Name and Address)
International Minerals & Chemical Corporation
5401 Old Orchard Road
Skokie, Illinois 60076

PROJECT DIRECTOR: (Name and Address)
Mr. Srini Vasan
International Minerals Corporation
5401 Old Orchard Road
Skokie, Illinois 60076

TITLE OF PROJECT:

"Utilization of Phosphate Slimes"

PROJECT SITE:

Chicago, Illinois and Lakeland Florida

PROGRAM (PROJECT) NUMBER:

14050EPU

DATE OFFERED:

DATE ACCEPTED (AWARDED):

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: ~~10~~ 15 months Thru:	$219,792	$153,854

DESCRIPTION OF PROJECT:

Very finely divided wastes are suspended in water during the processing of phosphate rock matrix. These wastes, termed "slimes," tie up huge quantities of water in slime pond reservoirs. Because of the colloidal nature of the slime it is very difficult to dry the ponded wastes. The water pollution problems which can occur because of this method of phosphate processing and waste disposal are; 1) fouling of fresh water due to seepage from ponds, 2) lowering of the water table due to high water requirements, and 3) sea water encroachment due to a lowering water table. There is also a large and wasteful use of land in the impoundment of these wastes.

The solution consists of using the slimes to produce a large volume product of ceramic materials. Preliminary market studies indicate a substantial demand for structural clay products. Experimentation by the IIT Research Institute has shown that clay-type bodies may be made from slimes using standard kiln techniques. Such bodies, such as brick and ceramic tile, have considerable potential in areas such as Florida which have shown trends toward accelerated building and construction in the next few years. This test coupled with the results of previous experiments involving the use of phosphate slimes, indicates the potential for utilizing large volumes of waste materials. If this market can be realized, considerable water may be released from the slime ponds for reuse as well as minimising the pollution aspects of processing phosphate ore.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

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INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: National Pollution Control Foundation
886 United Nations Plaza
New York, New York 10017

TITLE OF PROJECT: "Pollution Control of Bathing Beaches by Use of a Pneumatic Curtain"

PROJECT SITE: Stamford, Connecticut **DATE AWARDED:**

FEDERAL GRANT: $173,283 **TOTAL EST. PROJ. COST:** $393,441

PROJECT NUMBER: 15010DSZ **PPBS NO.** 501 & 508

DESCRIPTION OF PROJECT:

This grant is for the first year of a two-year project to demonstrate reduction of pollution levels at bathing beaches by enclosing the swimming area with a dense curtain of air bubbles emanating from perforated pipes laid on the bottom. This technique aerates the enclosed water and circulation patterns set up by the rising bubbles provide a barrier for floating debris, including oil.

INQUIRIES: Contact the

Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
633 Indiana Ave. N.W.
Washington, D. C. 20242

INFORMATION SHEET - - -

RESEARCH & DEVELOPMENT PROJECT

This sheet described briefly an R&D Contract *awarded under Section* 5, *Federal Water Pollution Control Act (Clean Water Restoraction Act).*

GRANTEE *or* CONTRACTOR: Uniroyal, Inc.
Research Center
Wayne, New Jersey 07470

TITLE OF PROJECT: "Treatment of Boat Wastes"

PROJECT SITE: Wayne, New Jersey

DATE AWARDED: February 27, 1969

FEDERAL FUNDS: $34,272

TOTAL PROJECT COSTS: $34,272

PROJECT NUMBER: 15020 DGR
14-12-506

DURATION: Ends December 27, 1969

PPBS NO.: 1502

FWPCA PROJECT OFFICER: Dr. James Shackelford

DESCRIPTION OF PROJECT:

This project will consist of two phases, Phases I and II will be a feasibility and demonstration study for the use of flexible systems for waste storage on small watercraft.

Phase I: 1) The available space on a variety of small watercraft for locating a flexible waste collection system will be charted.
2) The economic feasibility and complexity of installing waste storage systems on watercraft will be examined.
3) A technical literature search will be conducted into methods used for filtering waste bearing solutions and other treatment operational details.

Phase II: 1) A mock-up of a boat section will be built that involves waste generating devices and space for a collection container
2) The most promising collection system will be fabricated
3) Then the system will be operated to demonstrate its effectiveness.

INQUIRIES: *Contact the* Agricultural & Marine Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
Washington, D. C. 20242

INFORMATION SHEET - - -

RESEARCH & DEVELOPMENT PROJECT

This sheet described briefly an R&D Contract *awarded under Section* 5, *Federal Water Pollution Control Act (Clean Water Restoraction Act).*

GRANTEE or CONTRACTOR: General Dynamics
Electric Boat Division
Eastern Point Road
Groton, Connecticut 06340

TITLE OF PROJECT:
"Storage of Wastes from Watercraft and Disposal at Shore Facilities"

PROJECT SITE: Groton, Conn.
DATE AWARDED: March 14, 1969

FEDERAL FUNDS: $32,719
TOTAL PROJECT COSTS: $32,719

PROJECT NUMBER: 15020 DHB
14-12-509
DURATION: Seven Months
Ends October 13, 1969

PPBS NO.: 1502
FWPCA PROJECT OFFICER: Paul Lefcourt

DESCRIPTION OF PROJECT:

A waste impoundment system will be designed and constructed for use on-board an Electric Boat tug, The Three Duces. The design will minimize the waste water volume from the galley, and compact the wastes from all sources to be stored for shore disposal. For odor control the tank vent will contain an activated carbon canister

Disposal of wastes will be demonstrated at a shore facility. Disposal techniques will include pumping the wastes to a dock side sewer connection, to a small dock side treatment plant, or to a commerical septic tank truck.

INQUIRIES: *Contact the* Agricultural & Marine Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
Washington, D. C. 20242

INFORMATION SHEET - - -

RESEARCH & DEVELOPMENT PROJECT

This sheet described briefly an R&D Contrac*tawarded under Section* 5 *, Federal Water Pollution Control Act (Clean Water Restoraction Act).*

GRANTEE *or.* **CONTRACTOR:** Underwater Storage, Inc.
Silver Schwartz, Ltd. Joint Venture
1028 Connecticut Avenue, N.W.
Washington, D.C. 20036

TITLE OF PROJECT:
"Treatment of Watercraft Wastes from Small Vessels to Shore Treatment Facilities"

PROJECT SITE: Washington, D.C.

DATE AWARDED: February 12, 1969

FEDERAL FUNDS: $99,000

TOTAL PROJECT COSTS: $99,000

PROJECT NUMBER: 15020 DHE
14-12-493

DURATION: Ends September 2, 1969

PPBS NO.: 1502

FWPCA PROJECT OFFICER: Patrick Tobin

DESCRIPTION OF PROJECT:

A technique will be demonstrated of reducing watercraft pollution by installing a holding device aboard small vessels and disposing of these wastes at the shore. Ten small vessels will be modified and equiped with holding devices. The wastes generated aboard each vessel will be kept in the holding tanks and disposed at a marina along the Anacostia River by pumping the wastes into a collection line. The amount of wastes that has entered the collection line will be metered and then stored in an underwater nylon storage tank. Septic tank trucks will remove the wastes from the underwater storage tank at least once a week.

INQUIRIES: *Contact the* Agricultural & Marine Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
Washington, D. C. 20242

INFORMATION SHEET

Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Contract, under Section 6b, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR: (Name and Address)
General Electric Company
3198 Chestnut Street
Philadelphia, Pa.

PROJECT DIRECTOR: (Name and Address)
James C. White
General Electric Company

TITLE OF PROJECT: "Treatment of Watercraft Wastes"

PROJECT SITE: Philadelphia, Pennsylvania

PROGRAM (PROJECT) NUMBER: 15020DHG

DATE OFFERED: April 30, 1969

DATE ACCEPTED (AWARDED): 4-30-69

Grant or Contract Period	~~Eligible Grant~~ Contract Period Costs	FWPCA ~~Grant~~ or Contract Amount
From: 4-30-69 Thru: 3-31-71	$ 227,928	$ 227,928

DESCRIPTION OF PROJECT:

The program shall consist of two phases. Phase I shall completely characterize sanitary, culinary, and wash water wastes by collecting existing information, i.e., field visits and sampling aboard vessels. Phase II consists of constructing and installing an actual operating system, and a subsequent study of salinity effects, floatable residues, hydrogen gas generation, electrode optimization, vacuum collection, grinding, holding, settling, and disinfection using this installed system. The major emphasis of this program shall be devoted toward optimization and development of the electrocoagulation portion of the overall system.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

INFORMATION SHEET

2-25-70
Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Class I, under Section 5, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR: (Name and Address)
Rensselaer Polytechnic Institute
Troy, New York 12181

PROJECT DIRECTOR: (Name and Address)
Dr. William W. Shuster
Division of Bio-Environmental Engineering
Resnnelaer Polytechnic Institute
Troy, New York 12181

TITLE OF PROJECT: "CONTROL OF POLLUTION FROM OUTBOARD ENGINE EXHAUST"

PROJECT SITE: Troy, New York

PROGRAM (PROJECT) NUMBER: 15020 ENN

DATE OFFERED:

DATE ACCEPTED (AWARDED):

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: 1-1-1970 Thru: 6-30-70	$ 27,562	$ 26,104

DESCRIPTION OF PROJECT:

In this project, it is proposed to investigate the effectiveness of a pollution control device in alleviating the impact of exhaust products from two-cycle outboard engines on natural water. This will involve the determination of output and distribution of two-cycle outboard engines exhaust products, its effect on water quality and the potential impact on the biological community, in particular primary productivity.

The first phase will be studied in an enclosed tank of about 15 feet in diameter with maximum depth of 6 feet to provide a reasonable surface to volume ratio. Carbon balances will be made to determine the distribution of fuel in the air, in the surfaces of the water and tanks, and in the bulk of the water in the tanks. The effect of incorporating lake muds into the system will be studied since sorption phenomena may be significant in terms of immediate removal and perhaps subsequent leaching.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act(Clean Water Restoration Act).

GRANTEE: National Association of Counties - Research Foundation
1001 Connecticut Avenue, N.W.
Washington, D.C. 20036

TITLE OF PROJECT: "Community Action Guide for Erosion and Sedimentation Control"

PROJECT SITE: Washington, D.C.

DATE AWARDED: February 11, 1969

FEDERAL GRANT: $41,343

TOTAL EST. PROJ. COST: $56,543

PROJECT NUMBER: 15030DTL

PPBS NO. 1503

DESCRIPTION OF PROJECT:

The National Association of Counties-Research Foundation will develop a "Community Action Guide for Erosion and Sedimentation Control" to impress on local officials by providing comprehensive information on all aspects of planning, operations, financing, staffing and management of such programs. Successful case studies will be reviewed and evaluated. In addition, the grantee will prepare a preliminary State-of-the-Art report on erosion and sedimentation control for urban and rural problems based upon knowledge gained during interviews for the "Guide" Specific Research and Development needs will be defined.

INQUIRIES: *Contact the* Storm and Combined Sewer Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
633 Indiana Ave. N.W.
Washington, D. C. 20242

INFORMATION SHEET

ob 8/14/69
Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Research Grant, under Section 5, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR: (Name and Address)
Water Resources Center
University of California
Los Angeles, California

PROJECT DIRECTOR: (Name and Address)
Dr. H. B. Fischer
Assistant Professor
Department of Civil Engineering
University of California
Berkeley, California

TITLE OF PROJECT:

"Management of Water Quality in Stratified Reservoirs"

PROJECT SITE:

Berkeley, California

PROGRAM (PROJECT) NUMBER:

15040EJZ

DATE OFFERED:

DATE ACCEPTED (AWARDED):

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: One Year Thru:	$10,898	$10,209

DESCRIPTION OF PROJECT:

Procedures will be developed for control of the quality of outflow water from density-stratified reservoirs, utilizing the phenomenon of selective withdrawal. Specifically, the project will study the effect of fluctuations in the rate of outflow, such as often occur with variation of power house loads or downstream agricultural demand. Methods will be sought to predict water quality parameters in the outflow water, particularly temperature and dissolved salts, resulting from various conditions of stratification in the reservoir and variations of the rate of outflow.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 5, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: Arkansas Soil and Water Conservation Commission
151 State Capitol
Little Rock, Arkansas 72201

TITLE OF PROJECT: "Rehabilitation of a Brine-Polluted Aquifer"

PROJECT SITE: Garland City, Arkansas

DATE AWARDED: April 1, 1969

FEDERAL GRANT: $80,600

TOTAL EST. PROJ. COST: $123,600

PROJECT NUMBER: 15050 DLN

PPBS NO. 1505

DESCRIPTION OF PROJECT:

This two-year project will be executed in cooperation with the Arkansas Water Pollution Control Commission, and will demonstrate the restoration of the quality of a producing groundwater aquifer which has been polluted by seepage from an oil production brine disposal pit.

The brine-contaminated zone within the aquifer will be accurately located by exploratory wells and then withdrawn by a series of carefully placed and operated production wells. This withdrawal will cause a rapid influx of fresh water to restore the quality of the groundwater in the area. It is estimated that this artificial flushing of the aquifer can restore the water to useable quality in about two years, about fifty times as fast as through natural flushing processes.

INQUIRIES: *Contact the* Pollution Control Analysis Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior

Washington, D. C. 20242

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act(Clean Water Restoration Act).

GRANTEE: University of Arizona
Tucson, Arizona 85721

TITLE OF PROJECT: Limnological Effects of Organic Watershed Litter

PROJECT SITE: Tucson, Arizona

DATE AWARDED:

FEDERAL GRANT: $11,475

TOTAL EST. PROJ. COST: $40,000

PROJECT NUMBER: WP-01015-03

PPBS NO. 1506

DESCRIPTION OF PROJECT:

This study pertains to the limnological effects of watershed litter into small southwestern impoundments. Determinations are made as to (a) quantity of litter import, (b) organic constituents in extracts from pine and oak litter, (c) physiological and trophic effects on selected aquatic organisms, and (d) the distribution and rates of degradation of litter extracts in impoundments.

INQUIRIES: *Contact the* Agricultural & Marine Pollution Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
633 Indiana Ave. N.W.
Washington, D. C. 20242

INFORMATION SHEET – –

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act(Clean Water Restoration Act).

GRANTEE: Western Company
2201 Waterview Parkway
Richardson, Texas

TITLE OF PROJECT: "In-Tank Gellation to Reduce Oil Loss from Tankers"

PROJECT SITE: Richardson, Texas

DATE AWARDED: February 20, 1969

FEDERAL GRANT: $42,290

TOTAL EST. PROJ. COST: $42,290

PROJECT NUMBER: 15080DJN

PPBS NO. 1508

DESCRIPTION OF PROJECT:

Development of a system to rapidly gel oil within a tanker compartment to reduce oil pollution incidents caused by leaking tankers. The systems to considered will be designed for on board and portable facilities to be transported to the point of use by watercraft or a large helicopter.

NOT REPRODUCIBLE

INQUIRIES: Contact the
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior

Washington, D. C. 20242.

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act(Clean Water Restoration Act).

GRANTEE: Melpar Incorporated
7700 Arlington Blvd.
Falls Church, Virginia 22046

TITLE OF PROJECT: "Oil Tagging System Study"

PROJECT SITE: Arlington, Virginia

DATE AWARDED: February 28, 1969

FEDERAL GRANT: $50,000

TOTAL EST. PROJ. COST: $50,000

PROJECT NUMBER: 15080DJO

PROG NO. 1508

DESCRIPTION OF PROJECT:

Determine an operational system(s) for tagging petroleum and petroleum products to be shipped in watercraft and seagoing vessels, to facilitate tracing the source of spilled oil. The study will include consideration of the feasibility of utilizing the following identification methods:

a. Chemical tags
b. Radiochemical tags
c. Passive chemical/physical, analytical techniques
d. Particle tags

INQUIRIES: Contact the
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior

Washington, D. C. [illegible]

INFORMATION SHEET

Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Contract, under Section 6b, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR:
(Name and Address)
The Garrett Corporation
9851-9951 Sepulveda Boulevard
Los Angeles, California 90009

PROJECT DIRECTOR:
(Name and Address)
J. W. Abbott
(Same as above)

TITLE OF PROJECT: "Collection and Oil Water Separation System"

PROJECT SITE: Los Angeles

PROGRAM (PROJECT) NUMBER:
15080 DJP

DATE OFFERED:

DATE ACCEPTED (AWARDED):
April 18, 1969
Modified September 1969

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: April 1969 Thru: May 1970	$ 123,402	$ 123,402

DESCRIPTION OF PROJECT:

The project will develop and demonstrate the effectiveness of an oil skimming device and a high capacity, high efficiency centrifuge to be used to collect spilled oil from the water surface. Centrifuge design capacity will be 500 gallons per minute.

The skimming device and oil-water separator will be tested seaprately under simulated conditions, then mounted on a suitable platform for the evaluation of performance on chronic oil slicks in the Los Angeles harbor area.

NQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

INFORMATION SHEET

Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Contract, under Section 6(b), Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR: Sonics International Inc.
e and Address) 7101 Carpenter Freeway
P.O. Box 47088
Dallas, Texas 75247

PROJECT DIRECTOR: Mr. C. B. Easley
(Name and Address) Same as above

TITLE OF PROJECT: "Treatment of Oil Wastes Through the Use of Emulsifying Agents".

PROJECT SITE: Dallas, Texas

PROGRAM (PROJECT) NUMBER: 15080DJQ

DATE OFFERED: June 13, 1969

DATE ACCEPTED (AWARDED): June 13, 1969

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: 6-13-69 Thru: 9-5-69	$43,058	$43,058

DESCRIPTION OF PROJECT:

The project will determine the feasibility of transporting oil in the form of a highly viscous emulsion created by utilizing ultrasonic techniques and certain additives. The high resistance to flow to be created will reduce cargo loss in the event of an accident.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

INFORMATION SHEET--

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act(Clean.Water Restoration Act).

GRANTEE: Maine Port Authority
Portland, Maine 04111

TITLE OF PROJECT: Test and Evaluate Mechanical and Pneumatic Barriers to Contain Spilled Oil and Means for Removing the Contained Oil in Harbors and adjacent Waters.

PROJECT SITE: Port of Portland,Maine	**DATE AWARDED:**
FEDERAL GRANT: $64,350	**TOTAL EST. PROJ. COST:** $100,850
PROJECT NUMBER: 15080 DOZ	**PPBS NO.** 1508

DESCRIPTION OF PROJECT:

This project will test and evaluate a plastic foam boom and a diffused air bubble barrier for containment of oil spillages in the Port area and then follow up the containment phase with the design, construction, and evaluation of an oil recovery device to remove the contained oil. Limited demonstrations of currently available oil removal equipment are also planned in cooperation with equipment users and suppliers. The eighteen month study will consider not only the effectiveness and removal efficiencies of the the techniques involved but give emphasis to the economics and logistics involved in oil spillage protection and control.

INQUIRIES: *Contact the*

Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
633 Indiana Ave. N.W.
Washington, D. C. 20242

INFORMATION SHEET

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Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Contract, under Section 6(b), Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR:
(Name and Address)

Aerojet General Corporation
Environmental Systems Division
9200 East Flair Drive
El Monte, California 91734

PROJECT DIRECTOR:
(Name and Address)

R. M. Roberts
(see above)

TITLE OF PROJECT: "Feasibility Analysis of Incinerator Systems for Restoration of Oil-Contaminated Beaches"

PROJECT SITE: El Monte, California

PROGRAM (PROJECT) NUMBER:

15080DXE

DATE OFFERED:

DATE ACCEPTED (AWARDED):

June 30, 1969

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: 24 weeks Thru:	$	$ 35,551

DESCRIPTION OF PROJECT:

Feasibility analysis of alternative combustion systems, capable of total removal of oil contamination from beach materials. The project will conclude with recommendation concerning the technical and economic feasibility of alternate processes. Engineering concept drawings will be prepared.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

INFORMATION SHEET--

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: National Oil Recovery Corporation
Hook and Constable Road
Bayonne, New Jersey

TITLE OF PROJECT: "Demonstration of the Complete Conversion of Crankcase Waste Oil Into Useful Products - Without Producing Pollutant Material"

PROJECT SITE: Bayonne, N.J.

DATE AWARDED:

FEDERAL GRANT: $387,331

TOTAL EST. PROJ. COST: $1,678,104

TOTAL EST. ELIGIBLE PROJECT COST $1,530,004

PROJECT NUMBER: 15080 DBO

PPBS NO. 1508

DESCRIPTION OF PROJECT:

From the publication "Petroleum Facts and Figures," 1967, one billion gallons of lubricating oil for automobiles were sold nationally in 1965. Only approximately 120 million gallons are re-refined. Of this amount, approximately 25% by volume becomes sludge residue that requires the development of special disposal techniques. Accordingly, a significant portion of the National production even after re-refining enters the environment.

The current methods of re-refining in many instances are marginal operations in competition with refining of virgin oils. Many re-refiners have gone out of business, increasing the magnitude of the oil pollution problem.

This grant will demonstrate a new simplified process requiring minimum capital equipment and suitable for package construction for installations near waste oil sources and markets, as well as near complete conversion efficiency to reusable oil products and substantial reduction of the pollution potential from re-refining operations themselves. In addition, the process produces no sludge which has to be disposed. The grantee purports to have developed a saleable product for every cut.

INQUIRIES: *Contact the* Agricultural and Marine Pollution Control Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
633 Indiana Ave. N.W.
Washington, D. C. 20242

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: Battelle Memorial Institute
Pacific Northwest Laboratories
Richland, Washington 99352

TITLE OF PROJECT: "Investigation of Recovery of Large Marine Oil Spills by Use of a Vortex Assisted Air Lift System"

PROJECT SITE: Richland, Washington

DATE AWARDED:

FEDERAL GRANT: $29,840

TOTAL EST. PROJ. COST: $29,840

PROJECT NUMBER: 15080DJM

PPBS NO. 1508

DESCRIPTION OF PROJECT:

Delineate an optimum system which utilizes a vortex generator and a high capacity air lift system with an adjustable suction nazzel for pickup of spilled oil from the water surface. Performance of the system will be evaluated by prototype tests under simulated at-sea conditions.

INQUIRIES: Contact the

Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
Washington, D. C. 20242

INFORMATION SHEET

Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Contract, under Section 6(b), Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR: (Name and Address)
University of California, Santa Barbara
Department of Biological Sciences
Santa Barbara, California

PROJECT DIRECTOR: (Name and Address)
Dr. Michael Neushul

TITLE OF PROJECT: "A Preliminary Study of Oil Spill Damage in the Intertidal Regions of Santa Barbara and Ventura Counties, California."

PROJECT SITE: Santa Barbara, California

PROGRAM (PROJECT) NUMBER:
15080DZR

DATE OFFERED:

DATE ACCEPTED (AWARDED):
February 28, 1969

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: 5months Thru:	$ 7,200	$7,200

DESCRIPTION OF PROJECT:

Survey intertidal zones at ten stations previously surveyed and ten new stations to determine the extent of departure from normal in populations of plants and animals resulting from the Santa Barbara oil spill.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

INFORMATION SHEET

Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Contract, under Section 6(b), Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR: University of Michigan
(Name and Address) Willow Run Branch
Ann Arbor, Michigan

PROJECT DIRECTOR:
(Name and Address)

TITLE OF PROJECT: "Multi-Spectrum Scanning tc Determine Oil Slick Fate"

PROJECT SITE: Santa Barbara, California

PROGRAM (PROJECT) NUMBER:
15080EAF

DATE OFFERED:

DATE ACCEPTED (AWARDED):
May 26, 1969

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: 7months Thru:	$	$ 16,235

DES[illegible] OF PROJECT:

Determine the multi-spectral radiation characteristics of crude oil in the Santa Barbara Channel. This data will be used to develop remote sensing techniques for oil slick detection.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act(Clean Water Restoration Act).

GRANTEE: Battelle Memorial Institute
Pacific Northwest Laboratories
Richland, Washington

TITLE OF PROJECT: "Documentation of Cleanup Experience Following the Oil Spill Disaster at Santa Barbara, California"

PROJECT SITE: Santa Barbara, Calif.

DATE AWARDED:

FEDERAL GRANT: $22,900

TOTAL EST. PROJ. COST: $22,900

PROJECT NUMBER: 15080EAG

PPBS NO. 1508

DESCRIPTION OF PROJECT:

The purpose of the study is to document the causes and effects of the February 1969 oil spill in the Santa Barbara Channel and assess the effectiveness of measures tried to contain and clean up the spilled oil. The twelve week study is supported jointly by the Federal Water Pollution Control Administration and the Coast Guard.

INQUIRIES: *Contact the*
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior.

INFORMATION SHEET

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Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Contract, under Section 6(b), Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR: (Name and Address)
University of California, Santa Barbara
Department of Biological Sciences
Santa Barbara, California

PROJECT DIRECTOR: (Name and Address)
Dr. A. W. Ebling

TITLE OF PROJECT: "Proposal to Study the Abundance and Composition of Deep and Shallow Water Macroplankton and Littoral Fish Population in and about the Santa Barbara Channel"

PROJECT SITE: Santa Barbara, California

PROGRAM (PROJECT) NUMBER:
15080EAL

DATE OFFERED:

DATE ACCEPTED (AWARDED):
May 16, 1969

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: 7months Thru:	$17,300	$ 17,300

DESCRIPTION OF PROJECT:

1. Survey shallow and deep water plankton and shallow water benthic fish populations to determine abundance and composition in regions influenced by the February 1969 oil spill.

2. Determine the departure from normal conditions utilizing existing baseline data. Computer programs which relate species composition, diversity and abundance to environmental factors to environmental conditions will be used.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

INFORMATION SHEET

Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Contract, under Section 6(b), Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR: (Name and Address) University of California, San Diego
La Jolla, California 92037

PROJECT DIRECTOR: (Name and Address) Lynn A. Griner, Associate Professor of Pathology

TITLE OF PROJECT: "Treatment of Waterfowl Trapped in Oil Polluted Waters"

PROJECT SITE: San Diego, California

PROGRAM (PROJECT) NUMBER:
15080EBZ

DATE OFFERED:

DATE ACCEPTED (AWARDED):
June 30, 1969

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: 6months Thru:	$ 30,709	$ 30,709

DESCRIPTION OF PROJECT:

1. Determine the factors contributing to the death of wildfowl which have become coated with oil.
2. Develop methods of removing oil from birds plumage and restoring feathers to their normal condition.
3. Determine methods of managing cleansed birds to minimize mortality during captivity.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

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Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Research Grant, under Section 5, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR:
(Name and Address)
Florida State University
Department of Oceanography
Tallahassee, Florida 32306

PROJECT DIRECTOR:
(Name and Address)
Mr. Carl H. Oppenheimer
Department of Oceanography
Florida State University
Tallahassee, Florida 32306

TITLE OF PROJECT: "Microbiological Seeding to Accelerate Degredation of Hydrocarbons"

PROJECT SITE: Tallahassee, Florida

PROGRAM (PROJECT) NUMBER: 15080EHF

DATE OFFERED: April 11, 1969

DATE ACCEPTED (AWARDED):

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: April 11, 1969 Thru: April 11, 1971	$ 118,460	$ 105,803

DESCRIPTION OF PROJECT:

Techniques will be developed to accelerate the natural degredation process of oil in marine waters. Selected cultures of microorganisms, nutrient material and additives to increase the oil surface area will be added to oil in the environment to increase the ratio of degradation by microbiological action.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

INFORMATION SHEET

Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Contract, under Section 6(b), Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR: (Name and Address)
Melvin Z. Polickoff
24 Knoll Road
Tenafly, New Jersey

PROJECT DIRECTOR: (Name and Address)

TITLE OF PROJECT: "State-of-the-Art Report on the Composition, Properties and User of Oil Dispersants"

PROJECT SITE: Edison, New Jersey

PROGRAM (PROJECT) NUMBER:
15080EHO

DATE OFFERED:

DATE ACCEPTED (AWARDED):
April 1969

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: 3 weeks Thru:	$	$1,000

DESCRIPTION OF PROJECT:

Using information available through personal experience, literature search and interviews, prepare a written report which critically summarizes current knowledge on the following:

1. Chemical nature of dispersants
2. Physical and chemical properties of dispersants
3. Manufacturing Processes
4. Uses of dispersants and procedures by which their effectiveness, especially for dispersion of oil on water may be evaluated.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

INFORMATION SHEET

COB June 16, 1969
Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Research Grant, under Section 6b, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR: (Name and Address)
City of Cleveland
City Hall
601 Lakeside Avenue
Cleveland, Ohio 44114

PROJECT DIRECTOR: (Name and Address)
Dr. Edward J. Martin
Director, Clean Water Task Force
City of Cleveland
Cleveland, Ohio 44114

TITLE OF PROJECT: "Collection of Spilled Oil With the Aid of Foams"

PROJECT SITE: Cleveland, Ohio

PROGRAM (PROJECT) NUMBER: 15080EHP

DATE OFFERED:

DATE ACCEPTED (AWARDED):

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: 7-1-69 Thru: 6-30-70	$ 98,300	$ 68,810

DESCRIPTION OF PROJECT:

The project, to be directed by the City of Cleveland and performed in part by Horizons Incorporated, will develop a device to collect spilled oil from the water surface. The device will include provisions for trapping the oil film in a foam, collection and destruction of the oily foam.

A basic study of potential uses of "tramp oil" collected from the Cuyahoga River will also be carried out.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

INFORMATION SHEET

Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Grant, under Section 5, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR: (Name and Address)
Virginia Institute of Marine Science
Gloucester Point, Virginia 23062

PROJECT DIRECTOR: (Name and Address)
Dr. Wyman Harrison, Chairman
Department of Oceanography
Virginia Institute of Marine Science
Gloucester Point, Virginia 23062

TITLE OF PROJECT: "Investigation of Surface Films-Chesapeake Bay Entrance"

PROJECT SITE: Norfolk, Virginia

PROGRAM (PROJECT) NUMBER: 15080EJ0

DATE OFFERED:

DATE ACCEPTED (AWARDED):

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: June 1, 1969 Thru: June 30, 1969	$57,652	$ 49,652

DESCRIPTION OF PROJECT:

Determine the influence of wind, wave and current regimes on the movement of oil films in the Chesapeake Bay Entrance and develop an imperical film movement equation based on these data.

Remote sensing techniques will be used to supplement surface slick tracing operations and to differentiate between naturally occuring oil films and mineral-oil slicks.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

INFORMATION SHEET

Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Research Grant, under Section 5, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR:
(Name and Address)
Columbia University in the City of New York
Box 20
Low Memorial Library
New York, New York 10027

PROJECT DIRECTOR:
(Name and Address)
Dr. D. O. Shah
Laboratory of Surface Chemistry
Lamont - Doherty Geological Observatory
Palesades, New York 10964

TITLE OF PROJECT: "Molecular Interactions at the Oil-Water Interface and Formation of Microemulsions"

PROJECT SITE: Lamont-Doherty Geological Observatory
Palesades, New York 10027

PROGRAM (PROJECT) NUMBER: 15080EMP

DATE OFFERED:

DATE ACCEPTED (AWARDED):

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: 6-1-69 Thru: 6-31-70	$ 30,257	$ 28,816

DESCRIPTION OF PROJECT:

Basic laboratory studies of factors influencing the effectiveness of dispersants which might be used for oil pollution control purposes.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

INFORMATION SHEET

Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Contract, under Section 6(b), Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR: (Name and Address)

URS Systems Corporation
1811 Trousdale Drive
Burlingame, California 94010

PROJECT DIRECTOR: (Name and Address)

Myron B. Hawkins
(SEE ABOVE)

TITLE OF PROJECT: "Evaluation of Selected Earthmoving Equipment in Beach Restoration Operations"

PROJECT SITE: Burlingame, California

PROGRAM (PROJECT) NUMBER:

15080EOS

DATE OFFERED:

DATE ACCEPTED (AWARDED):

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: 10 months Thru:	$	$ 172,489

DESCRIPTION OF PROJECT:

Commercially available earth moving equipment used to date in beach restoration operations has not in most cases been well suited to efficient removal of contaminated beach material and/or mixtures of sorbing materials such as straw.

The primary penalty of inefficiency in this operation is inadvertent collection of large volumes of uncontaminated sand with attendant high costs and reduced restoration rates. Improvement in the efficiency of the collection operation will not only stend to overcome these problems, but will reduce the burden on the next stage cleaning or ultimate disposal of the collected materials.

The project will be aimed at evaluating the effectiveness of selected pieces of earth moving equipment, making appropriate minor modifications to improve efficiency, developing operating procedures and demonstrating the system on a contaminated beach.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Contract, under Section 6(b), Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR: (Name and Address)

Melpar Incorporated
7700 Arlington Boulevard
Falls Church, Virginia 22046

PROJECT DIRECTOR: (Name and Address) Dr. Thomas P. Meloy

TITLE OF PROJECT: "Application of Froth Flotation Separation to Beach Restoration"

PROJECT SITE: Falls Church, Virginia

PROGRAM (PROJECT) NUMBER: 15080EOT

DATE OFFERED:

DATE ACCEPTED (AWARDED):

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: 18 months Thru:	$	$ 304,168

DESCRIPTION OF PROJECT:

Design, construct and demonstrate the operation of a 30 ton/hour capacity froth flotation plant adapted for use in separation oil from contaminated beach sand. The plant made up of commercially "off the shelf" components and will be readily assembled at the location of the cleanup operation.

INQUIRIES: Contact Project Coordination

Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

INFORMATION SHEET

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Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a **Grant**, under Section **5**, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR: (Name and Address)
New York University
School of Engineering and Science
University Heights
Bronx, New York 10453

PROJECT DIRECTOR: (Name and Address)

TITLE OF PROJECT: **"Spreading of Oil Films"**

PROJECT SITE: **New York University**

PROGRAM (PROJECT) NUMBER: **15080 EPL**

DATE OFFERED:

DATE ACCEPTED (AWARDED): **May 22, 1968**

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From:	**$ 27,000**	**$ 25,716**
Thru:		

DESCRIPTION OF PROJECT:

Laboratory scale studies to determine and correlate the factors influencing the spreading of oil spilled at sea. The correlations will be aimed at predicting the rate and extent of spread of oil films so that, available resources can be used most effectively in combating pollution caused by oil spills.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

INFORMATION SHEET

Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Grant, under Section 5, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR: (Name and Address) Massachusetts Institute of Technology
77 Massachusetts Avenue
Cambridge, Massachusetts 02139

PROJECT DIRECTOR: (Name and Address) Dr. David P. Hoult
Massachusetts Institute of Technology
Room 3-252
Cambridge, Massachusetts 02139

TITLE OF PROJECT: "Containment and Collection of Oil in Protected Waters"

PROJECT SITE: Cambridge, Massachusetts

PROGRAM (PROJECT) NUMBER: 15080ESL

DATE OFFERED:

DATE ACCEPTED (AWARDED):

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: Oct.15,1969	$	$
Thru: Oct. 15,1970	$150,000	135,000

DESCRIPTION OF PROJECT:

Model studies will be carried out to gain information needed to design oil spill containment and collection systems for use in harbors, estuaries and near shore coastal waters. Study topics will include:

1) The motion and spreading of oil slicks;
2) The configuration of a wind driven oil slick restrained by a boom in the presence of waves and currents:
3) The details of motion of a section of a boom and the fluid mechanics of the water and oil flow associated with this motion;
4) The ability of a boom to follow moving wave contours, and the relation of this motion to structural requirements;
5) The flow of water and oil in a channel utilized to collect and concentrate oil slicks.
6) The fluid mechanics of oil skimming devices.
7) Boom strength requirements in short chop and, a 6 month study to develop preliminary design information.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

INFORMATION SHEET

Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Contract, under Section 6b, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR: (Name and Address)
American Process Equipment Corporation
10826 Venice Boulevard
Culver City, California 90230

PROJECT DIRECTOR: (Name and Address)
Robert Rod, President
(Same as above)

TITLE OF PROJECT: "Hydrocyclonic System for Separating Oil from Sea Water"

PROJECT SITE: Culver City, California

PROGRAM (PROJECT) NUMBER: 15080 EUU

DATE OFFERED:

DATE ACCEPTED (AWARDED):

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: 7 months Thru:	$ 78,870	$ 78,870

DESCRIPTION OF PROJECT:

Design, construct and test an oil-water separator which employs a cyclone concept to separate un-emulsified oil-water mixtures. The project will be borken into two phases - laboratory evaluation of a 50 gpm unit and field demonstration of a 1MGD unit.

The separator is intended for use in conjunction with devices which skim spilled oil from the water surface. The separator will be developed with the following objectives:

1. High through put
2. Maximum oil-water separation
3. Minimum size, weight, space and power requirements.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

INFORMATION SHEET

Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Contract, under Section 6b, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR: (Name and Address)
Reynolds Submarine Services Corporation
615 Southwest Second Avenue
Miami, Florida 33130

PROJECT DIRECTOR: (Name and Address)
Arthur L. Markel, General Manager
Reynolds Submarine Services Corporation
615 Southwest Second Avenue
Miami, Florida 33130

TITLE OF PROJECT:
Voraxial Oil Separation System

PROJECT SITE: **Miami, Florida**

PROGRAM (PROJECT) NUMBER: **15080 EZK**

DATE OFFERED:

DATE ACCEPTED (AWARDED):

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: **7 months** Thru:	**$**	**$88,982**

DESCRIPTION OF PROJECT:

Design, construct and test at pilot scale (50 gpm) high capacity oil-water separator device for separation of oil-water mixture collected by mechanical oil slick harvesting devices. Key features of the separator are high capacity with low power and space requirements. The project involves concept development of a unique oil-water separator invented by Reynolds Submarine Services. The device is based on a pump-separator unit which imparts a swirling action in the discharge line as it pumps the oil-water mixture collected by a skimmer system. The swirling action causes the oil to concentrate at the centerline of the pipe where it is skimmed off by one or more pitot tubes. It is estimated that an 8 inch 2500 gpm unit will be able to produce a water stream with from 10 to 100 mg/l oil and an oil stream within excess of 50% oil.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

INFORMATION SHEET

Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Contract, under Section 6b, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR:
(Name and Address)
Ecological Research Corporation
Hanover, New Hampshire

PROJECT DIRECTOR:
(Name and Address)
Dr. Robert C. Dean, Jr., President
Ecological Research Corporation
Hanover, New Hampshire

TITLE OF PROJECT: "A Mobile Washing System for In Place Restoration of Beaches Contaminated by Oil"

PROJECT SITE: Hanover, New Hampshire

PROGRAM (PROJECT) NUMBER:
15080 FIG

DATE OFFERED:

ATE ACCEPTED (AWARDED):

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: 10 months Thru:	$	$

DESCRIPTION OF PROJECT:

Design and test a pilot scale system for cleaning oil contaminated beach sand. The system includes a jet washer and cyclones for oil-water-sand separation. The project is the first phase of a two phase program to develop a compact mobile sand cleaning plant capable of processing 100 ton/ hr. of oil contaminated beach sand.

ENQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

INFORMATION SHEET

Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Grant, under Section 6b, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR:
(Name and Address)
WoodsHole Oceanographic Institution
WoodsHole, Massachusetts 02543

PROJECT DIRECTOR:
(Name and Address)
Dr. Howard L. Sanders
Woods Hole Oceanographic Institution
Woods Hole, Massachusetts 02543

TITLE OF PROJECT: Biological Recovery Following an Oil Spill

PROJECT SITE: Woods Hole, Massachusetts

PROGRAM (PROJECT) NUMBER:
15080 FMW

DATE OFFERED:

DATE ACCEPTED (AWARDED):

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: 12-1-69 Thru: 11-30-70	$ 44,862	$ 31,404

DESCRIPTION OF PROJECT:

Studies to be conducted will document the biological effects of a large spill of fuel oil in Buzzards Bay, Massachusetts. Patterns of recolonization and faunal change will be correlated with studies of the distribution, movement and fate of oil in the sediments.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: Water Resources Research Center
Virginia Polytechnic Institute
Blacksburg, Virginia 24061

TITLE OF PROJECT: "Water Rights Related to Water Quality Storage"

PROJECT SITE: Blacksburg, Va.

DATE AWARDED:

FEDERAL GRANT: $19,456

TOTAL EST. PROJ. COST: $42,240

PROJECT NUMBER: 16090FPW

PPBS NO. 609

DESCRIPTION OF PROJECT:

This is the second year of a two year study to investigate the legal implications of water storage and release for quality control. Of particular interest are possible claims on water released for this purpose. Both riparian and appropriative doctrines are being examined as exemplified by water law in the states of Georgia, North Carolina, Virginia, Illinois, Oklahoma, and California.

INQUIRIES: Contact the

Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
633 Indiana Ave. N.W.
Washington, D. C. 20242

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act(Clean Water Restoration Act).

GRANTEE: Regents of the University of California
405 Hilgard Avenue
Los Angeles, California 90024

TITLE OF PROJECT: "A Mathematical Model for Regional Treatment of Water Pollution Systems"

PROJECT SITE: Los Angeles, Calif.

DATE AWARDED:

FEDERAL GRANT: $34,159

TOTAL EST. PROJ. COST: $76,073

PROJECT NUMBER: 16090FPX

PPBS NO. 1609

DESCRIPTION OF PROJECT:

Project Objectives: To complete development of a mathematical model for determining optimum regional waste water treatment systems and to investigate the implications of such systems including potential cost savings and redistribution of streamflow due to transport of large volumes of waste in pipelines.

INQUIRIES: *Contact the*

Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
633 Indiana Ave. N.W.
Washington, D. C. 20242

INFORMATION SHEET

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: Oregon State University
Corvallis, Oregon

TITLE OF PROJECT: Economic Benefits from an Improvement in Water Quality

PROJECT SITE: Corvallis, Oregon

DATE AWARDED:

FEDERAL GRANT: $30,639

TOTAL EST. PROJ. COST: $35,117

PROJECT NUMBER: 16090FPZ

PPBS NO. 1601

DESCRIPTION OF PROJECT: This proposal is designed to study the value of water quality and water quality improvements in Upper Klamath Lake. It will seek to estimate the benefits resulting from increased recreational use of the Lake after technically feasible methods of retarding and/or reversing the eutrophic trends of the Lake have been implemented.

INQUIRIES: Contact the

Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
633 Indiana Ave. N.W.
Washington, D. C. 20242

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: Delaware River Basin Commission
P. O. Box 360
Trenton, New Jersey

TITLE OF PROJECT: "Interstate Regional Planning for Water Supply and Waste Disposal"

PROJECT SITE: Upper Delaware River Basin

DATE AWARDED:

FEDERAL GRANT: $79,996

TOTAL EST. PROJ. COST: $441,964

PROJECT NUMBER: 16090FPP

PPBS NO. 1609

DESCRIPTION OF PROJECT:

To develop information to plan for optimum water supply and waste disposal facilities for the interstate region influenced by the Tocks Island Reservoir and Delaware Water Gap National Recreational Area. This year, specific tasks are 1) selection of optimum regional plan for alternatives conceived during the second year, 2) adoption of the plan by the Commission to give it legal protection as part of the Comprehensive Plan of the Commission, and 3) preparation of the final report.

INQUIRIES: Contact the

Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
633 Indiana Ave. N.W.
Washington, D. C. 20242

INFORMATION SHEET

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Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Contract, under Section 5, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR:
(Name and Address)

Technicomp, Incorporated
Computer Consultants
600 Hempstead Turnpike
West Hempstead, New York 11552

PROJECT DIRECTOR:
(Name and Address)

Mr. James J. DeGroat, P.E.
600 Hempstead Turnpike
West Hempstead, New York 11552

TITLE OF PROJECT:

"Design of Waste Treatment Facilities by Computer

PROJECT SITE:

West Hempstead, New York

PROGRAM (PROJECT) NUMBER:

16090ERJ

DATE OFFERED:

DATE ACCEPTED (AWARDED):

June 30, 1969

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: 6/30/69 Thru: 12/31/70	$	$280,363

DESCRIPTION OF PROJECT:

The objective of this project is to enhance water pollution control by automating the design of municipal waste treatment plants as far as is economically feasible. This development should expedite the design process significantly, and also release engineers from repetitive mechanical tasks so they may be assigned to other steps in the design sequence where human engineering judgment is necessary. Included in the scope of work is the automated production of design specifications and drawings suitable for use in bid packages.

The final tool developed as a result of this contract will be useful to consulting engineers engaged in original design and also to regulatory agencies, including FWPCA, for reviewing proposed designs.

The consulting engineering firm of Quirk, Lawler and Matusky Engineers is providing project direction and developing automated engineering design procedures under a separate FWPCA contract (16090DIA). Technicomp, Inc. is developing automated procedures for preparation of drawings and specification, as well as providing general computer utilization guidance.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 5, Federal Water Pollution Control Act(Clean Water Restoration Act).

GRANTEE: Ohio River Valley Water Sanitation Commission
414 Walnut Street
Cincinnati, Ohio 45202

TITLE OF PROJECT: "Automated Forecast Procedures for River Quality Management"

PROJECT SITE: Ohio River below Cincinnati

DATE AWARDED:

FEDERAL GRANT: $150,950

TOTAL EST. PROJ. COST: $482,050 (3 yrs.)
$210,950 (1st yr.)

PROJECT NUMBER: 16090DHX

PPBS NO. 1609

DESCRIPTION OF PROJECT:

Demonstrate the potential for integrating data from automatic remote water quality sensors, manually operated sampling stations, waste load reports, river flow forecasts, and meteorological information with a digital computer in order to provide continuous forecasts of river quality changes for use in water quality planning, management, and enforcement.

INQUIRIES: *Contact the*

Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
633 Indiana Ave. N.W.
Washington, D. C. 20242

INFORMATION SHEET

cob 6/13/69
Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a grant, under Section 5, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR: (Name and Address)
Western Management Science Institute
Graduate School of Business Administration
University of California
Los Angeles, California 90024

PROJECT DIRECTOR: (Name and Address)
Dr. Glenn W. Graves
Graduate School of Business Adm.
Los Angeles, California 90024

TITLE OF PROJECT: "Multiple Techniques in Regional Treatment of Water Pollution Systems"

PROJECT SITE: Los Angeles, California

PROGRAM (PROJECT) NUMBER: 16090EGQ

DATE OFFERED:

DATE ACCEPTED (AWARDED):

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: 6/1/69 Thru: 5/31/70	$ 45,364	$ 39,609

DESCRIPTION OF PROJECT:

Development, coding, and machine testing of general mathematical models for design of regional water pollution control systems.

a. Perfection and extension of local gradient descent algorithm developed under FWPCA Grant WP-01210 to improve computational efficiency.

b. Extension of the current model to allow flows between treatment plants and/or junction points.

c. Development of programming techniques which can determine the most efficient location of regional pollution control plants.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

INFORMATION SHEET

cob 6/27/69
Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Grant, under Section 5, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR: (Name and Address)
The Trustees of the University of Pennsylvania
Office of Research Administration
3451 Walnut Street
Philadelphia, Pennsylvania 19104

PROJECT DIRECTOR: (Name and Address)
Mrs. Ann Louise Strong
Director
Institute for Environmental Studies
University of Pennsylvania
Philadelphia, Pennsylvania 19104

TITLE OF PROJECT:
"Stream Quality Preservation through Land Use Management: Legal and Governmental Aspects"

PROJECT SITE:
Philadelphia, Pennsylvania

PROGRAM (PROJECT) NUMBER: 16090EDC

DATE OFFERED:

DATE ACCEPTED (AWARDED):

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: 7/1/69 Thru: 6/30/70	$17,655	$16,770

DESCRIPTION OF PROJECT: Continuation of research into the legal and governmental aspects of land use management for stream quality protection.

1. Legal Studies
   a. Investigation of the legal basis for a development corporation and other innovative methods for distributing increments in development value occasioned by land use regulation.
   b. Collation and organization of the legal memoranda developed in relation to the Brandywine Plan regarding eminent domain, taxation, water quality regulations, zoning, easements, and other legal considerations.
2. Governmental Studies
   a. A case study of the Brandywine experience to develop a portrait of community response to planning initiatives directed toward urban water resources management.
   b. A documentation of the effects of the Upper East Branch plan on the plans of the other governmental units in the surrounding area.
   c. An examination of the background and success of a conservation easement program initiated recently the the Tri-County Conservancy on lower Brandywine Creek.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

INFORMATION SHEET

cob 6/26/69
Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Grant, under Section 5, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR: (Name and Address)
Alamo Area Council of Governments
Water Quality Planning
422 3A Life Building
San Antonio, Texas 78205

PROJECT DIRECTOR: (Name and Address)
Mr. C. Thomas Koch
Water Quality Planning
Alamo Area Council of Governments
422 3A Life Building
San Antonio, Texas 78205

TITLE OF PROJECT:

"Basin Management of Water Reuse"

PROJECT SITE:

San Antonio, Texas

PROGRAM (PROJECT) NUMBER:

16090EAX

DATE OFFERED:

DATE ACCEPTED (AWARDED):

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: 16 months Thru:	$60,898	$44,898

DESCRIPTION OF PROJECT:

The objectives of this project are to provide a mathematical model of a water use basin which will include most of the water supply, treatment, use, reuse and discharge and ultimate disposal components likely to be found in U.S. practice.

A scheme of system analysis among the components will be provided which will allow the selection of the optimum (lowest cost) and near optimum (combinations of these components) to fulfill a pre-specified demand pattern for water supply and pollution control.

The use of the above two constructions will be demonstrated by applying them to determining the optimums for the San Antonio basin stressing particularly water reuse and segregation of differing water qualities for different uses.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

INFORMATION SHEET - - -

RESEARCH & DEVELOPMENT PROJECT

This sheet described briefly an R&D Grant *awarded under Section* 5, *Federal Water Poll*ution Control Act (Clean Water Restoraction Act).*

GRANTEE *or* CONTRACTOR: Regional Science Research Institute
G.P.O. Box 8776
Philadelphia, Pennsylvania 19101

TITLE OF PROJECT: "Economic Evaluation of Stream Quality Preservation through Land Use Management"

PROJECT SITE: Philadelphia, Pennsylvania

DATE AWARDED:

FEDERAL FUNDS: $37,142

TOTAL PROJECT COSTS: $39,097

PROJECT NUMBER: 16090 DYX

DURATION: June 1, 1969 to May 31, 1970

PPBS NO.: 1609

FWPCA PROJECT OFFICER:

DESCRIPTION OF PROJECT:

This project is to evaluate the benefits and costs of preserving a major portion of a stream valley by conservation easements for the purpose of water resource protection.

Mathematical models will be developed and tested relating urbanization and stream quality.

Measurement of stream quality and environmental quality will be determined by relating objective measurements of physical conditions to subjective overall evaluations of amenity level made by the respondents. Preference ranking will be made of environmental bundles and bid price for each by the respondents.

INQUIRIES: *Contact the* Pollution Control Analysis Branch
Office of Research and Development
Federal Water Pollution Control Administration
Washington, D. C. 20242

INFORMATION SHEET -- --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 5, Federal Water Pollution Control Act(Clean Water Restoration Act).

GRANTEE: Department of Economics
Harvard University
Cambridge, Massachusetts 02138

TITLE OF PROJECT: "The Economics of Water Supply and Quality"

PROJECT SITE: Cambridge, Mass.

DATE AWARDED: January 1, 1969

FEDERAL GRANT: $27,681 (4th year)

TOTAL EST. PROJ. COST: $129,558

PROJECT NUMBER: 16090 DTF

PPBS NO. 1609

DESCRIPTION OF PROJECT:

This is the last year of a four-year project devoted to investigating and modeling the economic and political impacts of various local and regional water quantity and quality management policies. Several useful simulation models have already been developed and demonstrated. The final year is devoted to model refinement and preparation of a hardbound monograph to summarize the project. Specific tasks are:

1) Completion of the regional water quality management model which allows consideration of technical, economic, and political factors.

2) Further examination of the impact of alternative pollution control enforcement policies.

3) Finalization of preliminary screening models for river basin designs.

4) Application of regional growth models to estimate spatial distribution of future waste loads.

INQUIRIES: *Contact the* Division of Applied Science and Technology
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior

Washington, D. C. 20242

INFORMATION SHEET

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Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Contract, under Section 5, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR:
(Name and Address)

Stochastics, Incorporated
Westover Drive
Blacksburg, Virginia 24060

PROJECT DIRECTOR:
(Name and Address)

Dr. Richard G. Krutchkoff
Westover Drive
Blacksburg, Virginia 24060

TITLE OF PROJECT:

"Stochastic Models for Water Quality Management"

PROJECT SITE:

Blacksburg, Virginia

PROGRAM (PROJECT) NUMBER: 16090DUH

DATE OFFERED:

DATE ACCEPTED (AWARDED):

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: Thru:	$	$

DESCRIPTION OF PROJECT:

The project consists of refinement and further verification of stochastic water quality models for streams and estuaries developed by a Research Grant project at Virginia Polytechnic Institute, WP-01216. Stochastic models allow the prediction of probability distributions of expected water quality at different points in the stream below a waste outfall. This project will segment the existing model, conduct further model verification on Pontomac and Delaware Estuary data, develop better input parameter estimation techniques, and consider addition of nitrogenous oxygen demand and algal components to the dissolved oxygen model.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior

INFORMATION SHEET ‒ ‒

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: Utah State University
Utah Water Research Laboratory
Logan, Utah 84321

TITLE OF PROJECT: "Electronic Analog Simulation of the Salinity Flow System Within the Upper Colorado River Basin"

PROJECT SITE: Logan, Utah

DATE AWARDED:

FEDERAL GRANT: $26,997(second year)

TOTAL EST. PROJ. COST: $54,309

PROJECT NUMBER: 16090DVU

PPBS NO. 1609

DESCRIPTION OF PROJECT:

The applicability of an electronic analog device will be demonstrated for simulating the complex hydrologic and salinity flow systems of the Upper Colorado River Basin. In addition, through the analog simulation of the complex flow sytem, various alternative management possibilities will be evaluated for a water supply of a given quantity and salinity.

INQUIRIES: Contact the Division of Applied Science & Technology
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
633 Indiana Ave. N.W.
Washington, D. C. 20242

INFORMATION SHEET – –

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6 Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: Utah Water Research Laboratory
Utah State University
Logan, Utah 84321

TITLE OF PROJECT: "Sequential Water Use Within a Hydrologic Complex"

PROJECT SITE: Logan, Utah

DATE AWARDED:

FEDERAL GRANT: $37,390

TOTAL EST. PROJ. COST: $166,757

PROJECT NUMBER: 16090DWR

PPBS NO. 609

DESCRIPTION OF PROJECT:

This study will utilize data from a selected drainage basin to demonstrate the utility and desirability of evaluating the water quality system as an integral function of the hydrologic system. Guides to the improved allocation and management of water resources in a complex system will be developed. Analytical methods of optimizing sequential water uses with respect to selected parameters of water quality will be tested. The project shall continue and be concluded according to the original plan.

INQUIRIES: *Contact the*
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
633 Indiana Ave. N.W.
Washington, D. C. 20242

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RESEARCH, DEVELOPMENT, OR/DEMONSTRATION PROJECT

This Project is a Grant, under Section 5, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR: (Name and Address)

Leland Stanford Jr. University
Stanford, California 94305

PROJECT DIRECTOR: (Name and Address)

Mr. Ray K. Linsley
Professor
Department of Civil Engineering
Stanford University
Stanford, California 94305

TITLE OF PROJECT:

"The Philosophy of Planning for Water Quality Management"

PROJECT SITE:

Stanford, California

PROGRAM (PROJECT) NUMBER:

16090DWX

DATE OFFERED:

DATE ACCEPTED (AWARDED):

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: Oct. 1, 1969 Thru: Sept. 30, 1970	$ 42,602	$40,472

DESCRIPTION OF PROJECT:

In order to improve the implementation performance record for the many many excellent technical plans developed for water quality management over the past decade, the grantee will examine closely the philosophy of planning as currently practiced as well as various conceptions of the role which should be played by the planner. Based on this evaluation, improved planning procedures will be developed so that plans will be more publicly acceptable and workable.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 5, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: Department of Environmental Sciences and Engineering
Harvard University
Cambridge, Massachusetts 02138

TITLE OF PROJECT: "Dynamic Planning Techniques for Pollution Abatement"

PROJECT SITE: Cambridge, Mass.

DATE AWARDED: March 1, 1969

FEDERAL GRANT: $81,350

TOTAL EST. PROJ. COST: $85,632

PROJECT NUMBER: 16090DSS

PPBS NO. 1609

DESCRIPTION OF PROJECT:

This one-year project will be devoted to the construction of workable dynamic growth models to develop effective programs of stage construction of municipal and industrial waste water treatment plants and of efficient scheduling of non-treatment alternatives for pollution reduction. Examples of such alternatives are instream aeration, streamflow regulation and waste storage and export. The over-all objective is to generate dynamic models which will assist govermental planning agencies in developing scaling and timing guidelines for investment in pollution control and for predicting the effect of alternative long-term control policies.

INQUIRIES: *Contact the* Pollution Control Analysis Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior

Washington, D. C. 20242

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act(Clean Water Restoration Act).

GRANTEE: Dept. of Health
Commonwealth of Pennsylvania
Harrisburg, Pennsylvania

TITLE OF PROJECT: "State Water Quality Management Information System"

PROJECT SITE: Harrisburg, Pa.

DATE AWARDED:

FEDERAL GRANT: $252,601(1st year)

TOTAL EST. PROJ. COST: $1,544,075

PROJECT NUMBER: 16090DRA

PPBS NO. 1609

DESCRIPTION OF PROJECT:

The project will develop and demonstrate a state-wide water quality data management system. Data to be compiled include all ground and surface water samples, all waste effluent samples, treatment plant performance, and treatment plant construction status. Data will be stored according to STORET I river mile indices and STORET II latitude-longitude location codes. All data formats will be compatible with the FWPCA STORET System.

INQUIRIES: *Contact the*

Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
633 Indiana Ave. N.W.
Washington, D. C. 20242

INFORMATION SHEET ‐‐

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act(Clean Water Restoration Act).

GRANTEE: Water Pollution Control Federation
3900 Wisconsin Avenue
Washington, D.C. 20016

TITLE OF PROJECT: "Research Supplement - Journal Water Pollution Control Federation"

PROJECT SITE: Washington, D.C.

DATE AWARDED:

FEDERAL GRANT: $41,824 (second year)

TOTAL EST. PROJ. COST: $83,570 (second year)

PROJECT NUMBER: 16090DQZ

PPBS NO. 1609

DESCRIPTION OF PROJECT:

The proposed work under this project (second year) is to publish research papers in the field of water pollution control as a quarterly supplement to the Journal Water Pollution Control Federation. The supplement will present 500-600 pages of research work per year. The objective is to present current papers based on research work without undue delay which then will benefit the exchange of research information and will assist in reaching sooner the solutions to complex water pollution control problems. The long-term objective is to make this a self-supporting publication.

INQUIRIES: *Contact the*

Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
633 Indiana Ave. N.W.
Washington, D. C. 20242

INFORMATION SHEET

Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Contract, under Section 5, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR: (Name and Address)
Quirk, Lawler, and Matusky Engineers
505 Fifth Avenue
New York, New York 10017

PROJECT DIRECTOR: (Name and Address)
Mr. Thomas P. Quirk, P.E.
505 Fifth Avenue
New York, New York 10017

TITLE OF PROJECT:

"Design of Waste Treatment Facilities by Computer"

PROJECT SITE:

New York, New York

PROGRAM (PROJECT) NUMBER:

16090DIA

DATE OFFERED:

DATE ACCEPTED (AWARDED):

June 30, 1969

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: 6/30/69 Thru: 12/31/70	$	$385,000

DESCRIPTION OF PROJECT:

The objective of this project is to enhance water pollution control by automating the design of municipal waste treatment plants as far as is economically feasible. This development should expedite the design process significantly, and also release engineers from repetitive mechanical tasks so they may be assigned to other steps in the design sequence where human engineering judgment is necessary. Included in the scope of work is the automated production of design specifications and drawings suitable for use in bid packages.

The final tool developed as a result of this contract will be useful to consulting engineers engaged in original design and also to regulatory agencies, including FWPCA, for reviewing proposed designs.

The computer consultant firm of Technicomp, Inc., West Hempstead, N.Y. is developing the automated procedures for drawings and specifications under a separate FWPCA contract (16090ERJ). Quirk, Lawler and Matusky is providing project direction and developing automated engineering design procedures.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior

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Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Grant, under Section 5, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR: (Name and Address)
Ohio River Valley Water Sanitation Commission (ORSANCO)
414 Walnut Street
Cincinnati, Ohio 45202

PROJECT DIRECTOR: (Name and Address)
Robert J. Boes, Chemical Engineer
Ohio River Valley Water Sanitation Commission
414 Walnut Street
Cincinnati, Ohio 45202

TITLE OF PROJECT: "Automated Forecast Procedures for River Quality Management"

PROJECT SITE: Ohio River between Cincinnati, Ohio and Lousiville, Kentucky

PROGRAM (PROJECT) NUMBER: 16090DHX

DATE OFFERED:

DATE ACCEPTED (AWARDED):

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: 1-1-70 Thru: 12-31-70	$ 135,000	$ 85,000

DESCRIPTION OF PROJECT:

This is the second year of a proposed three-year project.

Data from 13 electronic water-quality monitors along a 168-mile section of the Ohio River are being transmitted hourly to a central receiving station at ORSANCO headquarters. This data together with river flow forecasts and water-quality and waste-load information from municipal and industrial water users will be used to verify a "dynamic" mathematical model of the segment of the river under study.

The project objectives are: (1) Continuous evaluation of the influence of wastewater discharges storm water runoff, tributary flow and other factors of quality conditions in a river system; (2) Verification of a dynamic mathematical model relating the effects of runoff and wastewater discharges to resulting river quality conditions; (3) Continuous forecasts of river-quality changes at selected river location; (4) Application of findings to water-quality control and water resources management.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration

INFORMATION SHEET

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 6, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: Sacramento State College Foundation for and in behalf of
Sacramento State College
6000 Jay Street
Sacramento, California 95819

TITLE OF PROJECT:

"Complementary - Competitive Aspects of Water Storage"

PROJECT SITE:
Sacramento, California

DATE AWARDED:

FEDERAL GRANT:
$18,737

TOTAL EST. PROJ. COST:
$66,980

PROJECT NUMBER: 16090DEA

PPBS NO.
1609

DESCRIPTION OF PROJECT:

An Engineering-economic investigation is to be conducted of the complementary and competitive aspects of water storage for water quality control. Determination of the extent and magnitude of the complementary and competitive aspects with other benefits will be scrutinized while searching for the conditions which maximize the net benefits from the reservoir. Benefits include flood control, channel improvement, irrigation, water quality control, downstream fisheries and recreation in the vicinity of the storage reservoir.

INQUIRIES: *Contact the* Pollution Control Analysis Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
633 Indiana Ave. N.W.
Washington, D. C. 20242

PCAB INFO FILE

INFORMATION SHEET --

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 5, Federal Water Pollution Control Act(Clean Water Restoration Act).

GRANTEE: Delaware River Basin Commission
Trenton, New Jersey 08603

TITLE OF PROJECT: "Delaware Estuary and Bay Water Quality Sampling and Mathematical Modeling Project"

PROJECT SITE: Delaware Estuary

DATE AWARDED: July 1, 1968

FEDERAL GRANT: (2nd yr.)

TOTAL EST. PROJ. COST: $ (2nd yr.)
$ (two yr.)

PROJECT NUMBER: 16090DCL

PPBS NO. 1609

DESCRIPTION OF PROJECT:

The purpose of this grant is to evaluate the accuracy and reliability of the research data, and information made available for use in a mathematical model of the Delaware Estuary by conducting a series of sampling runs in the estuary over a period of years. Samples obtained in this survey will be analyzed and comparisons will be made with mathematical model projections to determine the validity of the mathematical concept in an estuary pollution abatement program.

INQUIRIES: *Contact the* Pollution Control Analysis Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
633 Indiana Ave. N.W.
Washington, D. C. 20242

INFORMATION SHEET

RESEARCH & DEVELOPMENT GRANT

This sheet describes briefly an R & D Grant awarded under Sec. 5, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE: Bureau of Water Resources Research
University of Oklahoma
Norman, Oklahoma 73069

TITLE OF PROJECT: "Evaluation of Dispersed Pollutional Load"

PROJECT SITE:	Tulsa, Oklahoma	*DATE AWARDED:*	Aug. 1, 1968 June 1, 1967
FEDERAL GRANT:	$19,489 (Sec. yr.)	*TOTAL EST. PROJ. COST:*	
PROJECT NUMBER:	16090DBX	*PPBS NO.*	1609

DESCRIPTION OF PROJECT:

The purpose of this project is to develop a technique of evaluating the dispersed pollutional load. Municipal and industrial outfalls; storm, and combined sewer discharges are point sources of pollution, where as natural pollution, rural runoff, and direct urban runoff represent dispersed sources of pollution.

INQUIRIES: *Contact the* Pollution Control Analysis Branch
Office of Research and Development
Federal Water Pollution Control Administration
U.S. Department of the Interior
633 Indiana Ave. N.W.
Washington, D. C. 20242

Cob. 7/22/69
Date to be Released

RESEARCH, DEVELOPMENT, OR DEMONSTRATION PROJECT

This Project is a Grant, under Section 5, Federal Water Pollution Control Act (Clean Water Restoration Act).

GRANTEE OR CONTRACTOR: (Name and Address)	Syracuse University Research Institute 201 Marshall Street Syracuse, New York 13210
PROJECT DIRECTOR: (Name and Address)	Dr. Nelson L. Nemerow Department of Civil Engineering 151 Hinds Hall Syracuse University Syracuse, New York 13210
TITLE OF PROJECT:	"Allocation of Stream Pollution Carrying Capacity"
PROJECT SITE:	Syracuse, New York

PROGRAM (PROJECT) NUMBER: 16090DAJ

DATE OFFERED:

DATE ACCEPTED (AWARDED):

Grant or Contract Period	Eligible Grant Period Costs	FWPCA Grant or Contract Amount
From: 6/1/69 Thru: 5/31/69	$27,215	$25,665

DESCRIPTION OF PROJECT:

During the first two years of the project, a "pollution index" was developed for numerically ranking water quality conditions in streams where several different pollutants are present. A procedure for quantifying economic benefits resulting from different levels of water quality in a multiple-use watercourse was also developed.

During the final year, institutional studies will be conducted to determine the potential influence of such quantitative information on decisions made by water quality management groups. The project will attempt to determine whether the limited pollution carrying (assimilation) capacity of the Nation's streams should be regulated solely on a legislative basis, or whether they can also be allocated reasonably on an economic basis in conjunction with Federal and State laws.

INQUIRIES: Contact Project Coordination
Office of Research and Development
Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

GPO 891-256